

NEIGHBORS ON OUR EARTH

LATIN AMERICA AND
THE MEDITERRANEAN

Whipple & James

BASAL GEOGRAPHIES

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NEIGHBORS ON OUR EARTH

LATIN AMERICA AND THE MEDITERRANEAN

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THE MACMILLAN COMPANY, New York, 1950

Acknowledgments

The authors acknowledge with gratitude the assistance of Miss Eleanor De Mun in assembling content for the chapters dealing with Chile, Argentina, Paraguay, Uruguay, and Brazil; Mrs. Virginia Flemming Boase in assembling content for the chapters dealing with the West Indies and the dependent countries of Latin America; Mr. Floyd Radike in assembling content for the chapters dealing with the Mediterranean countries; and Mrs. Cynthia Colvin in the preparation of the study helps.

It would be impossible to list here the numerous sources which the authors have consulted for geographical information, but special acknowledgment is due to the following: Preston E. James, *Latin America* (New York: Odyssey Press, 1942); Robert Swanton Platt, *Latin American Countryside* (New York: Whittlesey House, 1943); and Raoul Blanchard and Raymond E. Crist, *A Geography of Europe* (New York: Henry Holt & Company, 1935).

The color and halftone drawings used in this book were drawn by Mr. Millard McGee. The line drawings on pages 105, 110, 190, and 290 were drawn by Mr. Vincent Kotschar.

The construction and line work for the maps in this book were done by the Manhattan Drafting Company. The art work and airbrush were done by Mr. Leonard Ralph Sorge.

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PRINTED IN THE UNITED STATES OF AMERICA

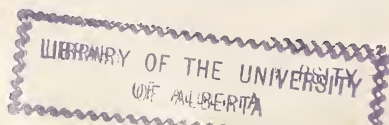


Table of Contents

Foreword to the Teacher	v	Ecuador, Perú, and Bolivia: The Andean Countries	86
Lands of Latin America	1	The Empire of the Incas	87
Latin America in the Past	1	The Spanish Conquest	91
The Latitudes and Climates of Latin America	8	The Andean Countries on the Map	94
How We Shall Study Latin America	10	Perú	94
México	14	Ecuador	102
México on the Map	18	Bolivia	105
Agriculture in México	21	Changes in the Andean Countries	111
The Cattle Ranches of México	28	Chile	114
Cities and Industries of México	29	Learning About Chile From the Map	116
Foreign Trade	32	Northern Chile and Nitrate	118
Changing Ways of Living	32	Middle Chile	121
Central America	36	Southern Chile	127
Central America on the Map	38	An Industrial Country	127
Self-Sufficient Communities	38	Argentina	130
Coffee Farming in Central America	40	Learning About Argentina From the Map	132
The Banana Lands	42	The Northwest	134
Other Farms and Their Products	45	The Northeast	138
Grazing Lands	45	The Gran Chaco	139
Forests of Central America	46	Patagonia	141
Panamá and the Canal	48	Early Settlement of the Humid Pampa—The First Change	142
Cities of Central America	51	Farming on the Humid Pampa—The Second Change	146
Importance of Central America	52	Estancias and Farms on the Humid Pampa Today	148
South America	54	Trade and Transportation	152
South America on the Map	58	Cities of Argentina	155
Climate and Vegetation	59	Uruguay	164
The People and Countries of South America	64	Uruguay on the Map	165
Venezuela and Colombia: The Two Caribbean Countries	66	Cattle and Sheep Ranches	165
The Caribbean Countries on the Map	68	Farming	168
The Orinoco Llanos	70	Cities and Trade	169
The Maracaibo Basin	74	Uruguay, a Buffer State	170
The Andes of Venezuela	76	Paraguay	172
The Caribbean Coastal Lowlands of Colombia	78	Paraguay on the Map	173
The Pacific Coastal Lowlands	80	Farms and Ranches	173
The Andes in Colombia	80	The Chaco War	176
Trade and Ways of Living	82		

Brazil	178	Three Rainfall Maps	262
Brazil on the Map	180	The Two Countries	262
The Backlands	184	Italy	266
The South	185	Italy on the Map	268
The Southeast	188	Northern Industrial Italy	271
The Northeast	201	Southern Agricultural Italy	276
The North	207	Italy's Island Possessions	281
Use of Brazil's Resources	212	Italy's Problem	281
Dependent Countries on the		Greece	286
Mainland of South and		What the Map Tells About Greece	288
Middle America	216	Farming, Grazing, and Fishing	291
The Guiana Colonies	217	Industry and Trade	295
British Honduras	218	Improving Living Conditions	296
The West Indies	220	The North African Fringe	300
Seeing the West Indies by Map	222	The Fringe on the Map	302
Cuba	223	The Tell	304
Hispaniola	226	The Steppes and the Desert	306
The United States in the West		Cities and Industries of North	
Indies	230	Africa	309
The British, French, and		The Mediterranean, a Single	
Netherlands West Indies	234	Region	312
The Mediterranean Lands	236	The Earth and Man's Use of It	316
The Mediterranean Region on		Showing the Earth on Maps	318
the Map	238	The Earth and the Sun	319
The Region as a Whole	241	Climate and Vegetation	322
Spain and Portugal	244	How Men Use the Land and	
Learning from the Map	246	Water	328
Farming in Spain	248	Facts About Latin America and	
Mines, Factories, and Cities		the Mediterranean	335
of Spain	256	Index	337
Portugal	258		

Foreword to the Teacher

This book provides a study of the regional geography of Latin America and the Mediterranean countries. It also maintains and extends the geographic understandings and skills developed in *Our Earth*, *Using Our Earth*, *Living on Our Earth*, and *At Home on Our Earth*.

The geography curriculum. At the present time there are two main patterns in which the content of regional geography is assigned to elementary school grades.

One method would assign the western and the eastern hemisphere respectively to each of two school years, usually fifth and sixth, continuing in the following year with a study of economic geography which attempts to organize data previously "learned" and to develop broad understandings.

The second method, used in this series of textbooks, recognizes that the significance of the land-resource pattern is determined to a large degree by the attitudes, objectives, and technical abilities of the inhabitants. Therefore, the geography of regions can be properly taught and comprehended only in terms of the cultural backgrounds of their inhabitants. The new geography is regional, but it is organized to promote the fullest understanding of the complex man-land relationships. Thus, in this book, the fifth of this series, Latin America and the Mediterranean countries are studied together because of their common heritage of Mediterranean culture. The pupil sees the reasons why the countries of Latin America have remained primarily agricultural until the present day. He understands the continuance in Latin America into contemporary times of the great estates worked by landless laborers. He learns to recognize the characteristics of the pre-industrial type of culture. This knowledge, combined with the knowledge of the modern industrial culture (through study of *At Home on Our Earth*), provides the background which is essential to understanding the geography of Eurasia and the geographic problems in our modern world. Hence, Eurasia and contemporary world problems are presented in the sixth book of this series.

Anyone examining this book will notice that an effort has been made to organize the concepts

stressed in the various chapters to develop understanding of major geographic principles. The authors recognize that many of the facts of geography will be forgotten by pupils, but that a grasp of basic geographic principles will provide them with the geographic insight necessary for good citizenship.

Study helps. Geographic activities for pupils should be focused on the concepts to be developed, but few teachers have the time necessary to devise such activities. The teacher who has more than one grade in a room is especially in need of activities which pupils can carry out independently. This book contains abundant study helps. These are not mere fact questions but are varied activities dealing with maps, pictures, and geographic vocabulary and ideas.

Illustrations. The purpose of a good geographic picture is that of illuminating and enriching the text. This book contains 208 photographs, of which 43 are in full color. Artist's drawings are used only for historical or strictly technical subject matter. Simply written captions lead the child to see the significance of each picture. Carefully designed activities based on the pictures promote ability in interpreting landscapes. See, for example, page 177.

Reference maps. There are two chief kinds of reference maps in elementary geography textbooks today. One is the elevation map, the other the surface-configuration map (*i.e.*, showing mountains, hills, plains.) For reference purposes in this series, a new type of surface-configuration map was developed because the roughness of the land influences man's use of it more than does the height of the land above sea level. The surface-configuration map has long been the basic reference map of leading geographers.

Reading ease. This text has been prepared in the light of extensive experience with pupils attending public schools. All recognized scientific controls of reading difficulty, including studies, experiments, and word lists, have been utilized in a realistic attempt to overcome the difficulties which teachers have commonly experienced in using geography textbooks. Teachers using this text will find that their average pupils will be able to read it for themselves.



The Lands of Latin America

Except for a few small islands, all the land in the part of the western hemisphere extending from the United States to the southern tip of South America is called Latin America. It includes México, Central America, the West Indies, and South America.

All these islands and countries together have been given the name, Latin America, because of the white people who first settled there. These early settlers were mostly Spanish and Portuguese. They are called Latin peoples because their languages developed from Latin, the language spoken in ancient Rome.

LATIN AMERICA IN THE PAST

Before the discovery of America. Long before white people visited the western hemisphere, there were Indians living in both North and South America. They had come into this hemisphere by way of Bering Strait. Some tribes had wandered off toward the east, but most of them had moved southward. Some had even pushed across Central America into South America.

These native tribes were not all alike,

even though they all had reddish-brown or yellowish-brown skin and straight, black hair. Some of the tribes lived in simple ways, while others had long been *civilized*, which means that they had learned to live in complex ways. One tribe at the southern tip of South America lived chiefly on shellfish, and built very simple shelters of materials found near by. Small, separate groups of other primitive tribes were scattered over the land. Some of these were warlike hunters and others peace-loving farmers, but they were all *migratory*, wandering from place to place. The farmers planted either corn or a plant called *manioc* as their chief food crop. Manioc has large roots like the root of a beet. By grating these roots, the Indians obtained a pulp, from which they made bread. When the soil no longer produced well or the wild game was scarce, they moved.

The civilized tribes were not nomadic but had permanent homes. One of these tribes, the Mayas, inhabited parts of México and Central America, and the Aztecs lived in central México. The Inca and certain other tribes dwelt in the western highlands of South America.



Celebration in a Mayan city. In the high tower the priests studied the position of the sun.

The map facing page 1 shows where each of these tribes lived.

Like most of the primitive Indians, these civilized groups made their living chiefly by farming. They had learned to irrigate dry lands. They planted corn as their chief food crop, and they also raised manioc, beans, potatoes, squash, tomatoes, tobacco, and other crops.

The Mayas. Of the civilized peoples, the Mayas were the greatest. They knew about the movements of the sun, the moon, and the stars, and had worked out a calendar to measure time. They knew at what time of the year to do their planting in order to obtain a good harvest. They grew such large quantities of corn that some of it could be saved from year to year and used when crops failed in any part of their empire. Some of their cities had populations of thirty or forty thousand, but the only way of

transporting food to these cities was on the backs of men. None of the Indians had learned to make wheels.

The Mayas knew how to construct beautiful buildings of stone, to paint pictures, and to weave. Like the Egyptians, the Mayas built pyramids. These were located and built so exactly that at the same time every year, usually June 22, a ray of sunlight through a small window would reach a certain spot inside the pyramid.

The Aztecs. Hundreds of years after the Mayas had been conquered by other native tribes, the Aztecs invaded central México. At that time they were a primitive tribe of skillful but cruel warriors. In México they learned many new ways of living from civilized Indians whom they had conquered. They forced Indians of the defeated tribes to serve as laborers on their estates. Perhaps you



An Aztec lord inspects the products of his fields. What work is being done by his servants?

have heard of the great Aztec chief, Montezuma. He lived in a magnificent capital city, which later became Mexico City. Here the Aztecs had built beautiful gardens and parks. Also they had gathered together many articles of gold and silver, often set with jewels.

The Incas. The Inca tribes had built up a great empire. They had conquered weaker Indian groups, governed them, and taught them to cultivate the same fields year after year. At the time Columbus discovered America, four fifths of all the Indians in the western hemisphere belonged to the Inca and Aztec empires. They lived chiefly on the highlands of México, Central America, and South America.

European homelands of the white settlers. The white people who settled in Latin America came chiefly from Spain and Portugal. These two coun-

tries are located on the Iberian Peninsula in southwest Europe. Find this peninsula on the map on page 238.

Here people lived in small groups, each group ruled over by a great landowner. Each landowner had fighting men to protect him and his large estate. He also had *serfs*, or peasants, who had to remain on the land and cultivate it for him. The people who were important in Spain and Portugal were those who owned the vast estates or who served in the army or in the church.

Spanish explorers. When Columbus first set out in the hope of reaching India by sailing westward from Spain, the wind blew his vessels steadily toward the southwest. The first land he came to was one of the thousands of islands that we call the West Indies, lying between North and South America. Because of this voyage and the three others made later

by Columbus, Spanish explorers also approached the Americas through the West Indies and the Caribbean Sea.

At first the Spanish explorers were not interested in the new lands. They cared only about finding a short route to India. Alonso de Ojeda, one of these explorers, crossed the ocean and touched South America near the equator. He sailed northwest to what is now the country of Venezuela. Americus Vesputius, after whom America is named, went with Ojeda and later wrote the first account to be published about the New World.

In 1513 Vasco Balboa climbed the mountains at the Isthmus of Panamá and discovered the Pacific Ocean. He was the first white man to see the world's greatest ocean from America's shores. Until then it had been seen by white men only along the coast of China. In the name of the king of Spain, Balboa claimed the water and all the land whose shores it washed. At that time men had no idea of the vast area of land and sea which he had claimed for Spain.

Several years after the Pacific was discovered, Hernando Cortés landed on the eastern coast of México near the present city of Veracruz. He burned his boats to prevent his men from returning to Spain. Then he boldly led them over the eastern mountains to the rich Aztec capital. They were soon driven out by the Indians, who found that these strange white men cared only for gold. But two years later Cortés and his men returned. This time he destroyed the power of the Aztecs. Meanwhile, Fernando Magellan was sailing westward through the strait which bears his name, near the southern tip of South America. After Magellan's sailors returned to Spain, Spanish explorers became interested in the continent of South America.

They began their explorations on the western coast and moved toward the east. They were not stopped by even the most warlike tribes of Indians. Some Spaniards were seeking gold to send back to the mother country. Some built up large personal estates on which they used

Vasco Balboa viewing the Pacific Ocean from a mountaintop on the Isthmus of Panamá. Notice the dense tropical rain forest through which he and his men had to travel.





Cortés and his men, dressed in armor and helmets, retreating from the Aztec capital after their first attack. Notice the boats used by the Aztecs and the bridge in the background.

Indians as laborers. Some came as missionaries to convert the Indians to Christianity. The map at the beginning of this chapter shows the parts of Latin America which were settled first by the Spanish. What color on the map is used for this purpose?

Portuguese explorers. Meanwhile Portugal also made claims to some of the land in Latin America. In 1500 Portuguese ships under the command of Pedro Álvares Cabral touched the eastern coast of South America. Cabral laid claim to the land in the name of the king of Portugal.

Slowly the Portuguese began to make settlements in what is now the large country of Brazil. Like many of the Spaniards, the Portuguese came to find new wealth, especially gold and silver.

But instead they found wild country occupied by scattered tribes of primitive Indians.

Conquest by Europeans. Because farming was the chief occupation in the countries from which the Europeans came, the settlers knew that farming, as well as mining, could make them wealthy. But they were not willing to do the steady, hard work of laying out the farms and of planting, cultivating, and harvesting the crops. They wanted laborers, as in their homelands, to do the work on large estates.

For this reason the Europeans made their settlements in regions having dense Indian populations, and avoided thinly settled regions. If you compare the map facing page 1 with that on page 11, you will see that the dense settlements are in



An early furniture factory in England. Hand-driven machines, like that on the left, were used. They were replaced by power machines after the invention of the steam engine.

the same areas. The Spanish saw large numbers of Indian farmers working for Indian masters and thought that these farmers could be made to work for new masters.

The Portuguese settlers laid out large plantations on the coast of northeastern Brazil. It was not long before they were raising great crops of sugar cane. They sold the sugar in distant European markets. But the Portuguese planters found too few Indians in Brazil to serve as laborers on their sugar plantations. They had to find workers elsewhere and bring them to Brazil.

Negro laborers. To provide laborers on the sugar plantations the Portuguese brought slaves from Africa. The first Negro slaves proved to be such good workers that more were brought over from time to time. Not only the Portuguese but also the Spaniards imported slaves. Later, at different times, the Negroes in Latin American countries were given their freedom as they were in

the United States. Today in some parts of Latin America, they make up most of the population.

Mixture of races. You can understand, therefore, why Latin America today has a mixed population. There are places where the population is almost entirely of European descent. There are other areas settled mostly by Indians. There are other areas with a mixed population including whites, Negroes, and Indians. And there are still other areas in which most people are of mixed Spanish and Indian descent.

Independent countries. As in our own country, the Latin American colonies broke away from their mother countries and set up independent governments. They did not declare their independence quite so soon as did the thirteen colonies that became the United States, but today most of the countries in Latin America are independent. There are twenty *republics*, or countries in which the people govern themselves. There



A large Spanish estate. The owner and his wife are returning to the castle, which can be seen on the hill in the background. A serf passing on the road bows toward the carriage.

are also a few small colonies governed by other countries.

Different settlers in the Americas.

The early European settlers in Latin America were quite different from those of the United States and Canada. The Europeans who came to Latin America in largest numbers—the Spanish and the Portuguese—came from southern Europe. Most of the settlers who came to the United States had lived in Great Britain. This difference in homelands made a great difference in their ways of living in the New World.

British ways of living. From the time of Francis Drake, the people of Great Britain had carried on trade with other countries. British ships went to sea to fish and to trade with other lands.

By the year 1800, British ships were sailing all over the world carrying British goods to other lands and bringing foreign goods to British people. The number of British farmers grew smaller as men went into other kinds of business. More and

more, Great Britain imported food for its people instead of growing food crops. It was beginning to develop an *industrial* way of living. This means that factories were being built in cities, people were moving to the cities to work in the factories, and the factory owners were selling the articles they made. Both the owners and workers used the money they made in the factories for food, clothing, and shelter. They were getting their living not directly from the earth, as a man does who grows the food he eats, but indirectly by trade. The settlers who came to North America from Great Britain were used to such ways of living.

Latin ways of living. Spain and Portugal, however, were largely farming countries as they are today. The farm lands were divided among large land-owners who had great power. They were knights and warriors. When they were not fighting they spent their time in hunting, visiting one another, and in ruling their estates. Their income came

from their land, cultivated by serfs and poor tenant farmers who knew nothing about industry or trade.

Living in the New World. In North America most of the early settlers worked their own land and soon became interested in developing industries, such as shipbuilding in New England. But in Latin America the settlers laid out large estates and left the work on the land to be done by tenant farmers. The trade between Latin America and the mother countries was far less than that between North America and the British Isles. Industries were very slow in developing, so slow that only recently have manufactured goods from Latin America become important in world trade.

As you learn about Latin America, you will see that the settlers kept most of the ways of living which they had learned in their homelands. They brought cattle and sheep to the New World, tried to grow the Old-World crops, and cultivated and harvested their crops by southern European methods. You will find that many of these ways of living have lasted until today and are important in the geography of Latin America.

THE LATITUDES AND CLIMATES OF LATIN AMERICA

Meaning of latitude. In learning where the many Latin American countries are located in the western hemisphere, you will need to recall what you know about latitude. The latitude of a place tells how far that place is north or south of the equator.

On most globes and maps you will see lines drawn parallel to the equator. These lines, forming imaginary circles around the globe, are called *parallels of latitude*. They are numbered in *degrees*

north or south of the equator. A degree is one three-hundred-sixtieth part of a circle. Since the distance around the earth is about twenty-five thousand miles, a degree of latitude is equal to almost seventy miles north or south.

Any point on the equator is in zero latitude. All points on a parallel marked thirty degrees north of the equator are in latitude 30 degrees north, or 30°N. Places south of the equator are in south latitude.

Low, middle, and high latitudes. The surface of the earth can be divided into low latitudes, middle latitudes, and high latitudes. The latitude of the poles is 90°, which is of course the highest latitude. The area extending about a third of the way from the equator to each pole is said to be in the low latitudes because in those latitudes the parallels have small numbers. The high latitudes extend from the poles about a third of the way to the equator. Between the low and the high latitudes are the middle latitudes, in which most of the readers of this book live.

Latitude and climate. Latitude is one of the causes of a warm or cold climate. As we go from the equator toward the poles, the climate generally gets colder. But the climate of a region depends also on at least three things besides latitude: altitude, ocean currents, and nearness to the ocean.

The ocean and climate. In summer, winds blowing from the ocean cool the neighboring land, which has heated up more rapidly than the open water. In winter, winds blowing from the ocean warm the land, and the weather is milder than that of regions farther inland. The inner parts of the continents are hotter in summer and colder in winter than the



ROOSEVELT FROM CUSHING

Mt. Chimborazo is one of the largest active volcanoes in the world. Although it is located in South America almost on the equator, its summit is covered with snow the year around.

seacoasts in the same latitude. In the tropics, where the temperatures are much the same from season to season, winds from over the ocean seldom make a great difference. They merely make the climate more humid.

The southern part of South America, which lies in the higher middle latitudes, is so narrow that no part of it is distant from the ocean. In winter it is warmed by the ocean, and in summer it is cooled by the ocean. The winters are not so cold nor the summers so hot as in the inland parts of Canada or northern United States.

Ocean currents and climate. Ocean currents also may make changes in the temperature of the neighboring land. Some currents bring warm water into the high latitudes, and some bring cold water into the low latitudes. Just west of Perú is a cold current, the Perú Current, that brings cold water to a tropical coast. Cool air from above this

current blows across the coast of Perú and is warmed. The warm air can hold more water than cold air can; so the coast gets scarcely a shower all year. In the cooler months come mists and fogs, as the air rises and becomes chilled along the foothills of the Andes. But no rain falls until the air has risen above the high slopes of the Andes.

Because of the Perú Current, the west coast of the country of Perú is cooler than other coasts at the same latitude. But not all ocean currents are like the Perú Current. Some are warm currents that bring rainfall or make the land warmer than it would otherwise be.

Altitude and climate. The higher the elevation of the land above the sea, the colder the climate. At high altitudes it is too cold for most plants to grow easily. At very high altitudes it is just as cold as near the north pole or the south pole, and snow lies on the peaks the year around.

Lines of longitude. North-south lines, imaginary circles passing through both poles, are called *lines of longitude*. They locate the east-west position of any point on the earth just as parallels of latitude locate the north-south position. Thus, we call the east-west position of any point on the earth its *longitude*. Any point on a line of longitude is exactly north or south of any other point on the same line.

Degrees of longitude. Like parallels of latitude, lines of longitude are also numbered in degrees. The nations of the world have agreed to call the line of longitude running through London 0° . West of London the lines are numbered "west" to 180° . East of London they are numbered "east" to 180° . The north-south line 30° west of London is 30°W . This globe shows you how the lines of longitude are numbered. Find the one running through London and marked 0° .

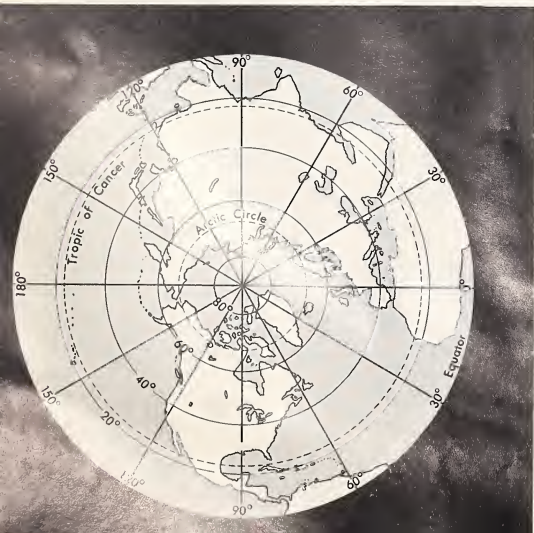
You know that a degree of latitude is equal to about seventy miles on the earth. At the equator a degree of longitude is also equal to about seventy miles on the earth. However, as one goes from the equator toward either pole, a degree of longitude covers a smaller and smaller distance until all the lines meet at the poles.

HOW WE SHALL STUDY LATIN AMERICA

This map shows you where the people of Latin America live. Notice in the key of the map that where an area is black, the people live crowded close together. Land that is lightly shaded is thinly settled. Where the land is left white, no people at all live.

From the many large areas with light shading or no shading at all, you can see that Latin America is not densely populated. Vast areas in South America are almost without inhabitants. More of the people live near or on the coasts than in the inner part of the continent. As you can see, there are many densely settled areas in Latin America, but many of these are not so crowded as other parts of the world. The most crowded sections are some of the islands of the West Indies, which are among the most thickly settled lands on earth.

In this book we shall try to learn why the people of Latin America live where they do and why so much of Latin America is thinly settled. We shall have to keep in mind the mixture of races and the great differences in kinds of land. We shall begin with México and go generally southward along the Pacific coast. Then we shall travel northward along the east coast of South America following the shores of the Atlantic and the Caribbean. Since we shall sometimes study two countries together or the different regions of a large country separately, we shall not follow this order exactly but only in a general way. We shall read about all the independent countries first and then about the few dependent countries remaining in Latin America.







Looking South To Latin America

This map, which is part of a globe, shows most of Latin America as you would see it from a rocket ship hundreds of miles above Chicago.

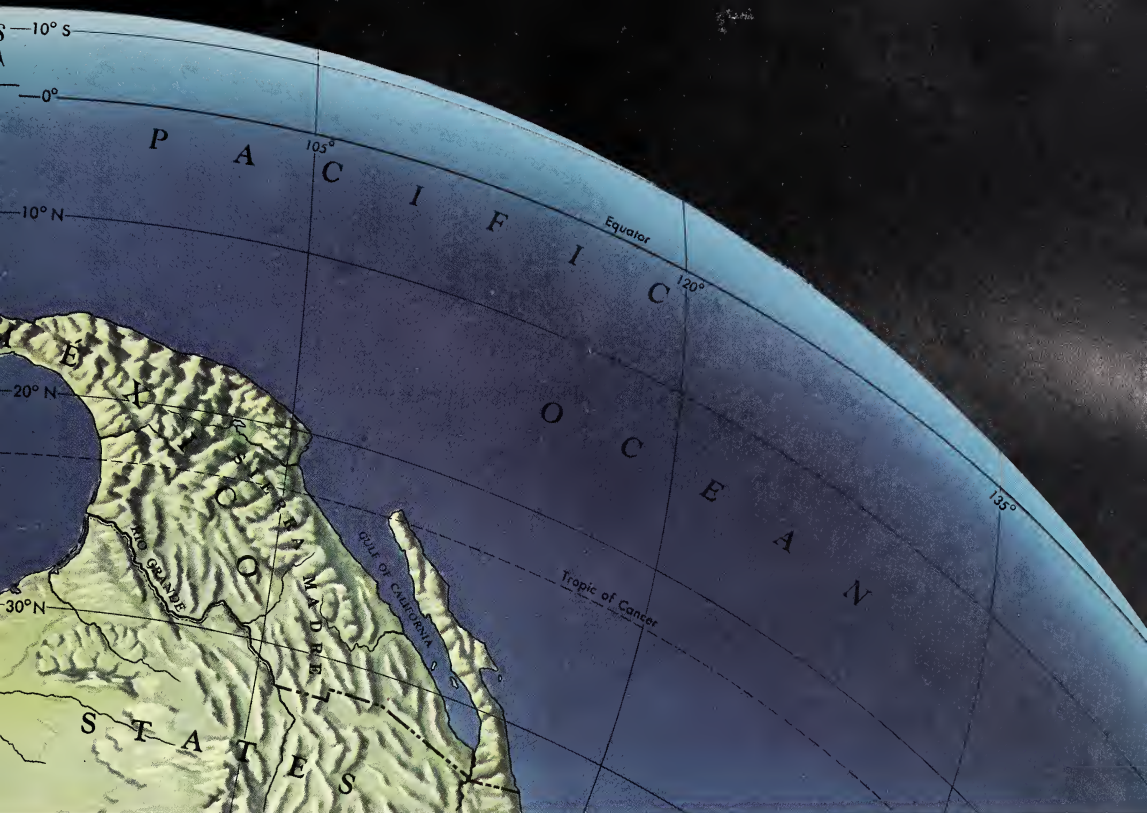
1. What besides the arrow tells you that you are north of the equator and looking south?
2. Notice that just south of the United States North America becomes narrower and narrower until it meets South America. What country lies just south of the United States?
3. Notice the small countries between

México and South America. How many are there? What name includes all of them together?

4. Why can you not see all of South America on this map?
5. Which of these Latin American countries lies partly in the middle latitudes?

EXPLAINING TO OTHERS

1. Why are the habits, customs, and ideas of Europeans who settled in Latin America different from those of the early



European settlers of North America?

2. Why did the Europeans make their settlements in regions having dense Indian populations?

3. Why did the Portuguese, when settling the coast of northeastern Brazil, lay out large plantations rather than small ones?

4. How did the Portuguese solve their problem of finding enough laborers for their large plantations?

5. Why is there a mixture of population in Latin America?

6. Name four things on which the climate of a region depends and explain how each influences the climate.

7. What lines on your classroom globe

would you use to find two cities directly north and south of each other?

MATCHING A WORD WITH ITS MEANING

<i>civilized</i>	imaginary circles around the globe parallel to the equator.
<i>manioc</i>	one three-hundred-sixtieth part of a circle
<i>serfs</i>	living in complex ways
<i>parallels of latitude</i>	a food crop from which bread can be made
<i>degree</i>	peasants who cultivate the land of an estate and are not allowed to move off the estate.



HOSMER FROM CUSHING

All through México one sees old Spanish churches, built of adobe brick with roofs of tile.

México

If you travel through México today, you see signs of the Indian and white peoples who lived there in the past. In southern México you pass through Indian farm villages in which life goes on in almost the same way as it did four hundred years ago. You see the ruins of stone temples built by the Indians of long ago. Often, facing a square, you find a village church built by the early Spanish settlers, who taught the Indians the Christian religion. In Mexico City, the capital, you see great cathedrals that were built soon after the Spanish conquest. You also see, especially in the larger cities,

many modern stores and factories much like those of a large city in the United States.

Maya and Toltec rule. The Maya Indian tribes, about whom you have read, lived on the Yucatán Peninsula and in the neighboring country of Guatemala, in Central America. For centuries the Mayan empire was very powerful, but it fell to pieces when its cities began to make war against one another. The Mayas were conquered by the Toltecs, another Indian tribe, who had come southward from the deserts in northern México.

The Toltecs settled chiefly in the central highland near what is now Mexico City. This highland covers most of the width of the country and is surrounded by mountains on all sides except the north. The Toltecs conquered the tribes living there and set up their own capital. The land must have seemed very fertile to these Indians, used to living in arid regions. As they extended their empire farther south and east, they forced the Mayas to accept their rule, and they learned many civilized ways of living from the Mayas.

Aztec rule. Later the fierce and warlike Aztecs, also from the deserts of the north, conquered the Toltecs and settled on the central highland. The Aztecs built their capital on an island in the midst of a lake. From this center they moved south and east, conquering other native tribes as they went. They forced the defeated natives to work on the farms of the rich Aztec lords.

Spanish rule. After Cortés and his men subdued the Aztecs, México was a Spanish colony for three hundred years. During this period it was ruled by Spanish governors.

The Spaniards seized the estates of the Aztec lords but continued to use the Indian laborers. The Spanish nobles planted commercial crops that they could sell in city markets or export to Spain. In some of the areas too dry for farming, the Spaniards pastured cattle which they had brought from Spain. The Spaniards also seized the Aztec mines and forced the Indians to work in them. Soon they were shipping silver to Spain.

Spanish settlements. Thus the location of the early Indian settlements determined in general where the Spaniards made their homes and even where people

in México live today. Most of the Aztec farms and mines were on the central highland. This region has been thickly settled since ancient times.

Early years of independence. After México became independent of Spain, the country was still ruled by the descendants of the wealthy Spaniards who had been given their land by the king of Spain. The Indians continued to work as laborers on the large estates or to raise subsistence crops on very small plots of the poorer land. Working either for a master or for themselves, they could gain only a bare living.

Thus the people of México were divided into a small group of very wealthy landowners and a large group of very poor farmers and day laborers. This system continued almost until today.

México today. Since the number of European settlers was small compared with the number of native Indians, México is an Indian as well as a Latin country. Today about five sixths of the people are either *mestizos* (people of mixed descent, Indian and white) or pure Indian. Usually the mestizos are more Indian than white.

In recent years important changes have been made in the use of the land in México. Today there are few large estates left. Instead there are many middle-sized farms and, in addition, groups of small farms in which the owners work together to cultivate their land by modern methods. More and more people are able to gain a good living from farming, and there are fewer and fewer very poor people. As you read this chapter, try to understand what steps are being taken to improve the use of the land and to help the Mexican people gain a better living.



MIDDLE AMERICA

Cities

- **MEXICO CITY** Over 1,000,000
- **Havana** 500,000 to 1,000,000
- **Managua** 100,000 to 500,000
- **Ponce** 50,000 to 100,000
- **Torreón** Under 50,000

- ☆ National Capitals
- Principal Railroads
- Principal Highways
- Canals

- Plains
- Mountain Basins
- Plateaus
- Hills and Low Mountains
- High Mountains

Scale of Miles

0 240 480

One inch stands for 240 miles



México on the Map

Pages 16 and 17 show México, Central America, and the West Indies, together called Middle America, and also the southern part of the United States and the northern part of South America. Locate the country of México on this map. What does each color on the map stand for?

The Mexican highlands. Notice the two chief mountain ranges of México, running roughly in the same direction as the two coasts. The western range is known as the western Sierra Madre and the eastern as the eastern Sierra Madre. Both are high and difficult to cross, but the western range is the greater barrier. Between the two is the central highland with scattered mountain ranges rising from it. Notice that this highland crosses the border of México and extends into the United States.

Only about a third of México is level or gently rolling. Besides the mountain ranges running in the same direction as the two coasts, there are volcanic mountains south of the central highland. High peaks in México reach elevations from 12,000 to more than 18,000 feet above sea level. Find the long, narrow peninsula of Lower California. It too is mountainous except at its southern tip.

The Mexican lowlands. As you probably know, a coastal plain borders the Gulf of México. Notice that this plain extends along the east coast of México all the way from the United States to Central America. Is this plain generally wider in México or in the United States? Much of the Gulf Coastal Plain in México has a hot, humid climate. The

part where the eastern end of México bends northward is the hot, rocky peninsula of Yucatán.

The lowlands on the Pacific coast are narrow. The northern part of this coast is a desert.

The central highland. The central highland is the heart of México. The people who live here have their homes chiefly in the basins between the mountains. These areas of gentle slopes in the midst of mountains are called *mountain basins*. The inhabitants of one basin may be entirely separated from other groups by mountains. What very large and important city do you see on the central highland? More than half of the people of México live on the central highland and the mountain slopes around it, and they carry on much of the country's farming, manufacturing, and trade. Yet the central highland is only about a sixth of the entire area of the country.

Volcanic regions. Extending along the southern edge of the central highland is one of the world's largest regions of volcanoes. The high peaks in this region are all volcanoes, and most of them are cone-shaped, called *volcanic cones*. Some are old and covered with forests and others so new that they are still building up their cones. Scattered all through this region are old lava beds, piles of cinders, and heaps of volcanic rock.

The highest volcanic cone in North America is Orizaba, 18,700 feet high. But the best known of all the towering peaks are the twin volcanoes near Mexico City. Smoke sometimes curls upward

from the crater of Popocatépetl, or the Smoking Mountain, but it has not been active for about three hundred years. Ixtaccihuatl, called the Sleeping Lady, is no longer active.

Parícutin. The newest volcano of all those in México, Parícutin, grew up out of a cornfield. Locate Parícutin on the map. In February, 1943, an Indian farmer who lived in the village of Parícutin was plowing his field with a team of oxen. He heard low rumbles in the earth but kept on plowing, for many slight earthquakes had been felt in that area for several weeks. Then he heard a louder rumbling which seemed to be close behind him. He turned and saw white smoke rising from the furrow. Quickly he drove his oxen out of the field and went to the village to report what he had seen.

That night the Indian villagers saw smoke rising from the field. By morning, cinders had piled up in the field, making a volcanic cone about twenty-five feet high. At noon the volcano began hurling forth stones, and the earth was shaken with hard quakes.

The eruptions continued. The cone grew steadily and within ten weeks was eleven hundred feet high. From it masses of vapor and smoke rose up into the air. Pilots of airplanes flying over this area said that the smoke rose three miles above the ground. About every six seconds the volcano sent forth a shower of rocks, which fell crashing to the ground. The people left their homes and moved to other villages.

Streams of lava now flowed down the sides of the cone and into the valley. The Indian's palm-thatched cabin with its surrounding fruit trees was covered with ash and cinders. Its roof fell in.

The earth continued to rumble and shake. The countryside was blanketed with lava and cinders, and the crops were destroyed. At night the growing cone glowed with the red-hot lava which poured out of its tip or broke out along its sides.

Scientists say that within the first seven months after the volcano began to erupt, it threw out almost two billion *cubic yards* of ash, rock, and lava. (A cubic yard is equal to a solid block a yard long, a yard wide, and a yard high.) At different times there have been as many as ten openings in Parícutin's sides, sometimes as many as three at once sending forth lava.

Most of Parícutin's neighboring volcanoes have become *extinct*, that is, are no longer active. The lava and ash they left in the valleys have been ground into soil by frost and rain.

Great clouds of white smoke pour forth from the crater of Parícutin, the youngest volcano in México. Its cone grows higher and larger each time there is an eruption.

HANCOCK FROM GENDREAU





Cold and warm lands. On the map notice that México lies partly in the low latitudes and partly in the lower middle latitudes. The northern part of México gets its weather sometimes from the United States and Canada. As far south as Mexico City, cold air from northern North America sometimes brings frosts even in summer. Some of the warmest places in México are the lowland deserts along the east coast of the Gulf of California; notice that these are north of the Tropic of Cancer.

As you travel southward in México, closer to the equator, the weather changes less from season to season. But even in the low-latitude parts of México, you cannot always travel comfortably with only warm-weather clothing. The different parts of the country lie at so many different altitudes that a traveler must be prepared for cold as well as warm wea-

ther. On the map locate the city of Cuernavaca, which lies in a valley. From Mexico City to Cuernavaca is a distance of only thirty-six miles. Yet in going this short distance you must climb from the mild climate of Mexico City up to a cold climate and then down to a warm one.

Rainy lands and dry lands. In a large part of the central highland the rainfall is less than is needed for farming. Most of the rain comes in summer. On the rainfall map above, find a very dry part of the country in the northwest and another in the north. The boundary line between México and the United States passes through land that is mostly too dry to raise crops without irrigation. In fact, only two parts of México have enough rainfall all year round. On the rainfall map locate these regions, one bordering the Gulf of México and the other on the



south coast bordering the Pacific Ocean.

Tropical forests. You know that the forests of a hot, rainy region are much thicker than those of a cooler region. On the eastern lowland of México, beginning at the city of Tampico, tropical forests extend all the way to South America. Find these forests on this map. Many different kinds of trees grow in them.

In northern Yucatán, however, the climate is drier and only scrub trees grow. The forests on the Pacific coastal lowland, which begin south of the desert, are also scrub forests. However, on both coasts some of the forests have been cleared away to provide more land for crops.

From lowland to mountaintop. On the map notice the land colored dark blue. What does this color stand for? As you climb from the lowlands up to the highest peaks, you see changes in the

vegetation. In the low valleys grow trees that require a warm climate. Higher up, oak trees are seen. Then conifers appear mixed with the oaks, until, a little over 11,000 feet above sea level, you see almost no broadleaf trees. From here to the timber line, about 13,000 feet above sea level, the forests are made up almost entirely of fir and pine. Above this line it is too cold for even dwarf trees, and there are windy pastures that reach to the snow line. Most of the highest peaks have snow on their summits the year round.

AGRICULTURE IN MÉXICO

On the central highland of México are many level areas used for *agriculture*, or farming. Most of this land is high enough to escape the warm, wet weather of the tropical lowlands and low enough



JAMES SAWDERS FROM COMBINE, DEATHERAGE FROM MONKMEYER

The picture on the left shows sheep grazing on a rocky slope in México. In the valley below, the farmer plows his field easily with the primitive ox-drawn plow shown on the right.

to escape the cold of the mountain peaks. Some valleys are large and fertile and receive just about the right amount of rain for successful farming. Other valleys are small, with soil too poor to grow good crops.

The central highland is the main corn-producing region of México. However, corn does not grow well on this land because much of it is too cold and dry. Even in good years the yields of corn are low. Less corn is produced from an acre of land in México than in almost any other corn-growing country in the world. But the majority of the inhabitants are Indians who continue to grow the crops their ancestors raised.

Kinds of farms. There are two chief kinds of farms in México. One kind is the farm owned by an individual, as in the United States. The other kind consists of farms that belong to a village of farmers, or a farming community called an *ejido*. In most *ejidos* each head of a family is given certain fields to cultivate. But in a small number of *ejidos*, chiefly those in irrigated areas of the north, all the fields are used as one large farm.

Each man does a share of the farm work and receives his share of the harvest. In an *ejido* the farm lands belong to the entire community. No farmer can sell his land. If he moves away from the *ejido*, it is returned to the community and given to someone else.

The farms that are owned by individuals are usually much larger than those cultivated by the members of an *ejido*. Farmers who own their land usually have two hundred fifty to four hundred acres. *Ejido* farmers may have about forty or forty-five acres, but only about ten of these are likely to be suitable for crops. There is not enough good farm land to go around, and much of the farming is done on steep slopes. If you visited México, you would see many small farms on the mountainsides.

Life in a Mexican farm village. You already know that the southern part of the central highland is the main corn-producing region of México. Most of the corn farmers are Indians who live in simple ways. Their houses, of one or two rooms, are built of logs and adobe bricks. The roofs of the houses are

covered with tile or thatch. Near the village *plaza*, or square, are houses in which several rooms are arranged around a *patio*, or open courtyard. The plaza, used as a market place and a place to celebrate holidays, is always in front of the chief church of the village.

In March, when the dry or winter season is nearly over near Mexico City, the farmers in the nearby villages prepare their fields for planting corn. The plants and bushes are dry and brown, and the valleys are dusty. The streams have dried up, and the wells are empty. All day the farmers work, chopping the bushes down and cutting away the tall dry weeds and grass. Later the fields are burned over.

By June the dry season is over. Thunderstorms come up, and hard rains fall on the dry land. Water runs down the mountain slopes into the valleys. Dry river beds become flowing streams. Soon the dry, brown slopes turn green. The ferns begin to grow. The wild fruit trees start to blossom.

By the middle of June the farmers plant corn in their fields. Often the ground is cultivated with a wooden plow drawn by oxen, and grains of corn are

dropped by hand into the furrows. The farmers raise just enough corn for themselves and their families. After the corn has been planted, the farmers often plant squashes and beans in the same field. When the young corn plants begin to grow, the fields are cultivated with a hoe.

The farmers cannot depend on the summer rains. Sometimes it rains so hard that water is left standing on their fields. During other years there is not enough rain.

In December the rains stop almost entirely. Now the corn is full grown and stands high in the fields. The ears are gathered. Bulging sacks of corn are tied to small donkeys that carry loads of astonishing size to the villages.

The cornhusks are also gathered, and these are tied into bundles. The clean inner husks will be used to wrap *tamales*. Tamales are made of corn meal and chopped meat and fat and are highly spiced with chili pepper. The mixture is wrapped in cornhusks and boiled. Tamales are most often served on feast days, or holidays.

The cornstalks are cut down with large knives known as *machetes*. The stalks

Primitive ways of living in México. Many people have no supply of water other than that from a public fountain. Small donkeys transport huge loads for the Mexican farmers.

JAMES SAWDERS—COMBINE



are used to feed the farm animals. But some farmers leave the stalks standing in their fields until the next year.

It is not easy for the village farmers to raise good crops on their small, steep plots. Sometimes the soil is very dry. Occasionally frosts kill the young corn plants. Yet the villagers make their living almost entirely by farming, and corn is their chief crop.

Nearly everyone rises at sunrise, works all morning, takes a long noonday nap, and stops work at sunset. For almost every meal the woman of the family must pound dry, hard grains of corn into meal and prepare *tortillas*, or thin, flat cakes made of corn meal and water and cooked on a hot griddle. Often there is no other food, but sometimes beans are served, or a bit of meat is rolled up in the tortilla and a sauce made to flavor it. Soon after supper, the people go to bed. Seldom are they out after dark.

A Mexican market. The farmers trade their products in a village market. Many merchants, some who live in the village and some from other villages, gather in the plaza. The merchants, many of whom are women, sit on stones or cross-legged on the ground. Spread out around each merchant are his wares piled on a bench or in baskets on the ground. They include stalks of sugar cane, different kinds of mats and baskets, bananas, oranges, limes, melons, turkeys, chickens, eggs, milk, beans, peanuts, large bowls in which corn may be kept, and cups and saucers painted with bright designs. Very cheap articles are sold for a *centavo*, a copper coin equal to one hundredth of a *peso*. The peso is used in México just as the dollar is in the United States. If you were traveling to México, you would exchange your dollars for

pesos, receiving several pesos for each dollar. Many purchases are paid for with eggs, corn, poultry, or other products. A village woman buys only a few things at a time. To her the market is a place where she can meet and talk with her neighbors. Most of the villagers speak some Spanish, but some still use the Indian language and keep up many customs of their forefathers.

Changes under way. For several years a farmer using modern methods has been farming near Mexico City, and by his example the villagers have learned better ways of using their lands. He began his work on a farm with poor soil and fertilized the fields with decayed vegetable matter such as any of the villagers might obtain without buying it. Corn raised on this model farm grew twice as high as the corn of his neighbors and bore more ears of corn. He also grew other crops such as vegetables, herbs, small fruits, and grains which the villagers had not been raising. In three years he changed his poor land into fertile fields producing abundant crops.

This farmer brought sheep to his fields. He wanted to show his neighbors that they could raise sheep and obtain wool to weave during the dry season. He made simple beehives from which honey could be taken without destroying the hive. He kept chickens, turkeys, hogs, and milk goats and built cheap shelters for them. He bought good livestock and cared for it well. He also built a small model house in which he and his wife lived. This house had an outlet for smoke, plenty of windows, and a roof that jutted out over the walls and gave shade. The cement floor helped to keep the house clean. There was also a hearth on which to cook.



CUSHING

A Mexican farm village surrounded by rugged, rocky mountains. The people living here grow their food on farm lands outside the village. Water is obtained from a public well.

After the farmer set up his small model farm, he waited to see what his Indian neighbors would do. Many came to the farm, looked about, and studied it. At first they asked no questions but just watched the crops growing, the model house and shelters going up, and the farm animals becoming large and fat. They realized that here was a thriving farm that would yield a good living for its owners. They went home over the mountains to think over what they had seen.

A few returned to ask the farmer for seed or for advice on how to get farm animals or how to improve their farms. These few were successful in making their farms over. Then more and more Indians began to visit the model farm and to build copies of its buildings.

This model farm had been set up by the Mexican government to teach the Indians better ways of farming. But the model farmer did not offer to help them until they asked for help. He supplied only the articles that the Indians could pay for. Sometimes they paid back with seed from their first crops or with chickens from their first flocks. As their efforts have met with success, the Indians have tried more and more to help themselves. So today many changes are going on in the ejidos.

The hacienda of the past. You have seen that the early Spanish settlers in México had large farms with Indian laborers to do the work. These large country estates were found in México for hundreds of years. They were called *haciendas* and seldom included less than



HOSMER FROM CUSHING

These Mexican corn cribs are made of woven branches covered with a layer of mud.

2,500 acres. Sometimes they included more than 8,000 acres. These were very large farms, for a farm of medium size in our Corn Belt usually includes less than two hundred acres.

Most of the persons who owned the haciendas were wealthy and lived in Mexico City or in European cities. The landowner employed a manager to take charge of his hacienda. The owners obtained much of their income from the sale of milk or commercial crops. They sold vegetables and fruit to the city markets and sometimes raised cattle.

The hacienda was *self-sufficient*. The farm laborers, who were almost the only people living on the estate, had small *subsistence farms*. These workers, perhaps several hundred on a single hacienda, were primitive corn farmers. They were sometimes paid a little for their work, but for the most part they lived on what they produced. On a hacienda you would see one large mansion, many storehouses and barns, and the rows of small houses where the workers lived.

Change to smaller farms. Before 1910 about three fourths of the Mexican farmers owned no land. Most of them worked on the haciendas as day laborers.

The Mexican government wanted to help these poor farmers. New laws were made about owning land. No estates except those used for grazing could include more than five hundred acres. Ranches used for pastures can have more than five hundred acres because in dry regions smaller farms could not supply enough feed for a herd of cattle.

The change from big estates to small and medium-sized farms did not take place all at once. But by 1940 the haciendas had almost disappeared.

Today more than two fifths of all the farms in México belong to individual farmers. The farmers who own their own land often hire laborers to help them. In some cases their farms are the best parts of the old haciendas. They include the level valley bottoms and the hacienda buildings. Or they may consist of land that was not cultivated until recently.

The government has tried to help the ejidos. It has lent them money to buy farm machinery and other necessary things. It has sent trained farmers, to teach the people the best crops to raise and how to grow them.

Oasis crops. In the northern desert are farms wherever there is water for irrigating the valleys. On these oases commercial crops are grown. These are chiefly cotton, wheat, and fruit.

Maguey. Another commercial crop grown in México is *maguey*, a kind of century plant, which flowers only once and then dies. It is grown chiefly for its juice, which is used in making a Mexican drink called *pulque*. The big leaves of the plant are often used to thatch huts, and fiber from the leaves is woven into rope. The heart of the plant is boiled for food.

Maguey is often grown in México in open places on the slopes of the mountains. The plants do not need to be irrigated and will grow on rocky slopes where grain will not grow. Hundreds of maguey plants may be seen on a farm.

The owner of a maguey plantation has no trouble marketing his pulque. Mexican farmers drink pulque every day along with their corn, beans, and chile. Many people who live in the cities use it also.

Tropical crops. On parts of the Caribbean coastal lowland some of the dense tropical forests have been cleared away, and the land planted with tropical crops such as bananas, rice, and sugar cane. On a sugar plantation you would see great fields of cane growing in straight rows so long that they seem endless. Part way up the mountainsides are coffee plantations.

Sisal. Find Yucatán on the map

(page 16). One of the most profitable commercial crops of northern Yucatán is *sisal*. The sisal leaves of Yucatán grow as wide as a man's hand and twice as long as a man's arm. They are knobby but not thorny. Often great fields of sisal cover a large part of a farm.

Sisal will grow in shallow, stony soil and in a hot climate. The plant takes moisture from the air. Because sisal will burn while green, it is sometimes planted in separate fields with broad paths between. If a fire should start in one field, the paths will keep it from spreading to other fields. On some sisal farms there are high towers in the fields from which the workers keep watch for fires during the dry season.

Sisal plants must be eight years old before they reach their full growth. Then their leaves are cut for fiber. During the year three or four fleshy leaves

Near Pueblo the Spaniards built a beautiful church on top of an ancient Toltec pyramid. The maguey plants in the valley below are used for a favorite Mexican drink, pulque.

CUSHING



Sisal is taken to a mill to be pressed free of juice and pulp. The fibers are then dried.



are gathered from each plant. The full-grown leaves, those lowest on the stem, must be cut often enough to keep the plant from flowering. If it is allowed to bloom, it will not live its full life of about fifteen years.

After the leaves have been cut, they are piled up and later hauled to the mill in low flatcars that run on rails. Since the laborers are not paid very much, it is not expensive to transport the heavy leaves to the mill.

At the mill the fiber of the leaves is separated from the pulp, then washed, and afterward dried in the sun. The pulp, which forms a large part of the leaf, is kept to be used as fertilizer. The fiber is pressed tightly into bales and tied. These are taken by truck to the port of Progreso, from which they are shipped to the United States. Our farmers use thousands of miles of sisal twine on *binders*, machines that cut wheat and tie the stalks into bundles.



THE CATTLE RANCHES OF MÉXICO

In the dry northern part of México nearly all the land except the oases and deserts is used for the grazing of cattle. Cattle ranches are also found on some of the grasslands in central and southern México. In fact, México has vast areas of good natural grassland suitable for raising meat and dairy animals.

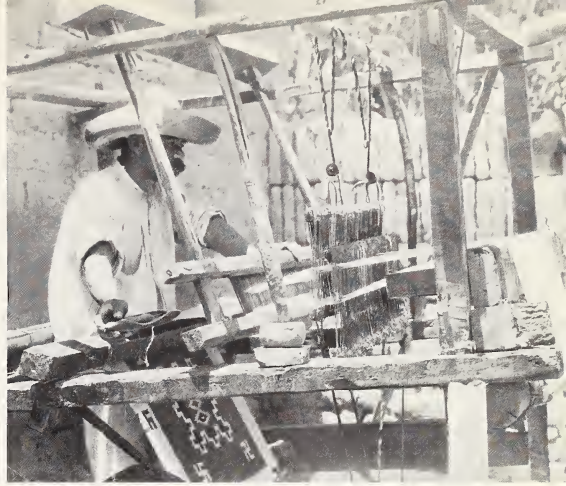
Even so, México is not an important cattle-raising country. The people eat only about a fourth as much meat as we do in the United States, and few Mexi-





PHILIP GENDREAU, N. Y.

An Indian potter at his wheel, making pottery to sell to tourists in the village market.



JAMES SAWDERS—COMBINE

Using a hand loom this Mexican weaves a blanket with a bright and colorful design.

cans care for dairy products. To help the people of Mexico City to get more healthful food, the government once brought a fine herd of dairy cattle to pastures just outside the city. But disease spread among the animals and the herd was wiped out.

Remember that the way land is used depends not only on the kind of land—whether it is forest, grass, or desert land—but on the ways in which the inhabitants prefer to make their living. A people fond of meat and dairy products might have made México into a vast pasture land.

CITIES AND INDUSTRIES OF MÉXICO

All through México are many small factories that employ a few workmen and use raw materials produced close by. These small industries sell their products to the people in neighboring communities. But more and more the factories being built are large ones like those you have seen in cities in the United States.

The Mexican government has been encouraging new industries by allowing the owners to run their factories without

paying taxes. For example, they are not taxed on imported materials or factory machinery. The government has also been helping industries by building power plants that use running water to generate electricity.

Factory products. The chief products are *textiles*, or woven goods. Many of these are made in the city of Puebla just southeast of Mexico City. They are sold throughout the country, especially in the central region. Cotton textiles made from cotton grown in northern México are particularly important.

Many other useful products also come from Mexican factories. Cement manufacturing is a large industry. Cement is needed for México's new highways and public buildings. The manufacture of paper grew up in the small village of San Rafael; electric power could be obtained from streams fed by snow that melted on the slopes of Ixtaccihuatl, and these slopes furnished the raw material, wood pulp from trees. Other factories make huge quantities of soap, and also fertilizers, dyes, paints, and printing ink. Especially in and around Mexico City,

manufacturing industries are rapidly being built. What differences do you think more factory products will make in the lives of the Mexican people?

Mexico City. The capital city of México is the third largest city in Latin America. More than a million people live in Mexico City, and it is still growing. Some of its people work for the government, others work in stores or factories, and still others work in transportation or in trade. Many people are engaged in trade with foreign countries, but even more carry on domestic trade.

The city has a central plaza and many old buildings. Near by are tall office buildings, modern hotels, and a national theater where operas and concerts are given. In the downtown part of the city is a very wide street for automobiles. Old narrow streets still lead out to the parks and the residential districts.

Mexico City is the chief market for the large farming section of the country. Manufactured products from other countries are brought here to be sold in markets on the central highland. Among the imports are automobiles, machines, grains, and other foods. Many of these imports enter the country through Veracruz, the chief seaport of México. Others are brought into Mexico City over the railroad lines. A few miles east of the city is the airport, built on an old lake bed that has been drained.

This interesting old Spanish city has a large tourist trade, especially since it has been reached by the Pan American Highway.

There are many factories in Mexico City: food canneries, tanneries, clothing factories, cigarette factories, and others. If you visited these great factories, you would see the names of United States

companies, some of which have built branches in México.

Guadalajara. No other city in México is nearly so important to the country as Mexico City. Guadalajara, second in population, has less than a quarter of a million people although it is steadily growing larger. It, too, is a commercial city, made rich by the neighboring silver mines. It is also a large market center for beans, chile peppers, and alfalfa, all grown on near-by farms.

Monterrey. As you learn about the countries of Latin America, you will find that few have both iron and coal. México has small but sufficient quantities of both. These are brought together in the largest city of northern México, Monterrey, for the making of iron and steel. Almost all of México's iron and steel products are made here. Among other products, Monterrey's factories make many articles out of *plastics*. Plastics are materials that can be molded into any shape and then hardened. The steering wheels of automobiles are often made of plastic.

Monterrey has grown large because it was reached by the first railroad from the Texas border. Today it is a meeting place for several railroad lines, including the main line from the United States. Good paved automobile highways also pass through Monterrey.

Puebla. Less than a hundred miles southeast of Mexico City is the city of Puebla. Here are many factories that produce cotton cloth, glass, tiles, and pottery. Puebla is one of the cleanest and most healthful of the Mexican cities. Puebla de los Angeles, the full name of the city usually referred to as Puebla, means "village of the angels." Like other cities in México, it has many interesting



PHILIP GENDREAU, N.Y.

Oil storage tanks near Tampico. The sunshine and palm trees remind us of a winter resort.

churches, more than fifty. Outside the city are small ejidos much like those you have read about.

Tampico. The center of the Mexican oil industry is Tampico, located near the petróleo fields in the eastern coastal lowlands. It is a seaport, surrounded by tropical farms, seven miles up the Río Pánuco from the Gulf of México. (*Río* is the Spanish word for river.) For miles, refineries and huge storage tanks extend along the southern banks of the river. For many years petroleum was exported from Tampico, but now it is refined for use within the country. Fuel oil is produced for use in the factories and on the railroads. Gasoline is produced for automobiles. Some of the oil from Tampico goes by pipe line to a big refinery near Mexico City.

Handwork. Although Mexican industry is producing more and more, less

than half of the population can afford to buy factory products. The Mexican government has been encouraging the poor farmers to make fine articles by hand such as their Indian ancestors made. With the money that tourists will pay for such articles, the farmer can buy useful factory goods to make his life more comfortable. Tourists and people in other countries, especially the United States, will pay good prices for fine hand-carved furniture, shiny wooden bowls, silver jewelry, Mexican pottery, hand-blown glassware, hand-tooled leather, and hand-loomed laces and rugs.

Silver mines of México. México supplies more than a third of the world's silver. Silver is used to make coins and to coat other metals. It is also used in making camera film and in silvering the backs of mirrors. In the central part of México and here and there over

GOLD 43,256,704

COTTON CLOTH 37,531,552

SILVER 18,765,776

LEAD 16,221,264

SISAL 12,597,506

RAW COTTON.. 11,768,368

MÉXICO

PRINCIPAL EXPORTS

Value in United States Dollars

the country are silver-mining centers.

Much silver mining has long been done near the city of Pachuca. In some of the mines the ore with enough silver to pay for mining it has been used up. Before many years the other mines will probably close. But Pachuca is still a silver-mining center and a very prosperous city.

FOREIGN TRADE

You have seen that goods produced by México's factories go largely into domestic trade. For foreign trade México produces farm crops such as sisal and cotton. It exports more fish than any other country in Latin America. But minerals are the most valuable of all its exports.

From the beginning of World War II more and more of México's minerals have been needed by people in other parts of the world. Copper is a good example. It is needed in making electrical machines and in carrying electricity for light, power, and telephone and telegraph systems. It is used in building, in the manufacture of automobiles, and in some kinds of paint. It is laid on the

bottoms of ships because salt water does not hurt it. México does not yet use much of its mineral supply for its own industry. However, wire is now manufactured in México from copper which is sent back to México after being refined in the United States.

Besides silver and copper, México exports lead, zinc, gold, and other minerals in smaller amounts.

This graph shows the value of the six principal Mexican exports during the year 1947. The one of greatest value is at the top of the graph, and the one of least value at the bottom. The longer the bar, the greater the value of the export. Of course, every year this value changes. From this graph name the products that are exported. Which are minerals? Where in the total list do the minerals stand? How many of these exports come from the central highlands?

CHANGING WAYS OF LIVING

Old ways. You have now seen that until 1910 most of the Mexican people made a bare living as subsistence farmers or laborers on large haciendas. As in colonial times, the population consisted

of a small number of wealthy landowners and a large number of poor laborers who owned no land. These two widely different groups of people had little in common. About half of the Mexican people still gain their living in the same way as their ancestors did centuries ago. Even though corn does not grow well in the cool, dry lands of México, the Indian farmers plant it as their chief crop. Also, there is not enough good farm land to go around. Most of the farmers in México remain poor.

Before 1910 less than a fourth of the Mexican children were sent to school. Outside the cities there were hardly any schools at all. As a result many farmers and working men of today have had little education.

New ways. Today the hacienda has almost completely disappeared, and the Mexican government has been helping the villagers learn more productive methods of farming. Instead of a few large haciendas, many medium-sized farms are raising food for foreign and domestic trade.

The government has been irrigating more land and making it fit for farms and pastures. Wheat as well as corn is being

planted. Wheat, you know, grows well in a colder, drier climate than corn. Large orange and lemon groves have already been laid out. In Lower California many thousands of olive trees have been planted.

Although much has been done to help México's farmers, two thirds of them still own less than twenty-five acres each. These farms are too small to yield more than a bare subsistence for their owners. Wherever possible, the government is encouraging groups of such farmers to work all their land as a single farm owned by all together. It is easier to use modern methods and modern machinery on a large farm than on a small one.

In recent years thousands of schools have been built. Today, almost half of the people of school age or over can read. Since 1936 high-school education has been free to all.

New industries have been started in México and many of the old factories made modern. People who cannot work in the factories are learning to gain income by doing handwork at home. More and more people are able to afford the factory products that make their lives more comfortable.

On the left is a primitive threshing floor. The grain is tramped out of the straw by horses. This method is being replaced by the use of modern threshing machines like that on the right.

JAMES SAWDERS—COMBINE



Using The Facts of Geography

As we travel through México today, we notice many things created by the people who live and have lived in México. Decide whether the early Indians, the early Spanish settlers, or the Mexicans of today have been responsible for:

an oil well	the Pan American Highway
a model farm	a medium-size farm
a hacienda	a textile factory
a maguey plantation	an orange grove
an old stone temple	
an airport	

CAN YOU UNDERSTAND DIFFERENCES?

Explain the difference between:
primitive and civilized ways of living
a colony and an independent country
mestizos and Indians
an ejido and a farm owned by an individual
subsistence farms and commercial farms
tamales and tortillas
active and extinct volcanoes
mountain range and mountain basin
a plaza and a patio
a centavo and a peso
maguey and sisal

PLACING EVENTS IN THE PROPER ORDER

Copy on your paper the following events in the order in which they happened.

Cortés conquers the Aztecs.
The Maya tribe becomes powerful.
The Spaniards plant commercial crops.
Large estates are divided into middle-size farms and small farms.
The Toltecs conquer the Mayas.
México becomes independent of Spain.

The Aztecs conquer the Toltecs.
Industries develop in México.

A WORD PUZZLE

Here is a game that will help you remember some of the new words in this chapter. Copy the letters in *LATIN AMERICA* on your paper in a vertical line. (*Do not write in this book.*) After each of the letters put a word that begins with that letter. After the “N” you may put two small words. To help you find the correct word its meaning is given below.

L —The coastal plain along the Gulf of Mexico

A —A tribe of fierce and warlike Indians

T —A tribe conquered by the Aztecs

I —The first inhabitants of México

N —Modern ways of living in México

A —The chief means of making a living in México

M —Persons who are part Indian and part white

E —A kind of farming community

R —Changing petroleum into oil products

I —The “Sleeping Lady,” an extinct volcano

C —A Mexican coin

A —Dry

AN IMAGINARY JOURNEY

Suppose that you are packing your bag for a trip to México in the summer time. What clothing will you need to take if you intend to visit:

Tampico
Mexico City

The high slopes of the Sierra Madre
The east coast of the Gulf of California
Cuernavaca
The central highland

REVIEWS IN PICTURE FORM

1. Draw a picture strip of an Indian corn farmer's life. Show what he does in March, in June, and in December. Be sure to show how the land appears during each of these months.

2. Show how Parícutin built up a volcanic cone, by drawing a picture to fit each of these titles.

- a. The farmer sees the smoke.
- b. The Indian villagers watch the smoke at night.
- c. The volcanic cone is twenty-five feet high.
- d. The volcano begins to hurl stones.
- e. Streams of lava flow down the sides of the cone.
- f. The countryside is blanketed with ash.

3. Draw a picture of a mountain and label the type of vegetation that is found at each level above the sea from lowland to mountaintop.

QUESTIONS TO TALK OVER

1. How did the location of the early Indian settlements in México help to determine where the people live today?

2. Why did the Mexicans continue to grow corn as their chief crop when they did not obtain good yields?

3. Why was it wise for the Mexican government to set up a model farm near Mexico City?

4. Why is not México an important cattle-raising country?

5. How has the disappearance of the haciendas benefited the Mexican peasant farmers?

6. How has the Mexican government encouraged the growth of new industries?

7. Why is it wise for poor farmers to make handmade articles to sell?

8. Why does a group of farmers in México often work their lands as one large farm?

HOW SHARP ARE YOUR EYES?

If you have been looking very closely at the place names in your book, you will have noticed that when we speak of México, we use the Spanish accented "e" (é) just as the Mexicans do. This letter is different in sound from the Spanish "e" that is not accented. But when we talk about Mexico City, we are using the English words that mean *Ciudad de México*, and we do not need to use the Spanish accented "é." Explain why Yucatán has an accent over the second "a."

WORKING WITH MAPS

1. Find two large peninsulas in México. What are their names?

2. Test your knowledge of places in México by finding on the map on page 16 each of the following cities; tell one thing for which that city is well known.

Mexico City	Guadalajara	Tampico
Veracruz	Puebla	Pachuca

3. Find and name one volcano, telling all that you know about it.

4. On the map on page 21, point to the part of México in which you would find many herds of cattle.

5. Using the maps on pages 16-17, 20, and 21, write a paragraph telling what you know about the land and the climate in Yucatán. Mention the amount of rainfall and whether the land is level, hilly, or mountainous.



JAMES SAWDERS—COMBINE

A port in Nicaragua. The logs on the beach were brought from the forests and will be shipped out, perhaps to the United States. How were they transported to the coast?

Central América

Connecting México with South America is the rugged area of Central America. It is less than a third as large as México. Yet it contains six small countries and a British colony. In Central America, as in México, there are low, narrow plains on both coasts with highlands between. As in México, most of the people live in the highlands.

Six small countries. Of the independent countries in Central America, Guatemala, just southeast of México, has

the largest population. Yet only the southern third of the country is thickly populated. Nicaragua, the largest of the countries, is poor. It sells less in foreign trade than any other Latin American country. El Salvador, which lies entirely on the Pacific side of Central America, differs from its neighbors in that every part of its area is occupied. It is densely populated. In Honduras the warm, rainy Caribbean coast produces bananas, and these make up the larger

part of the country's exports. Honduras makes much use of air transportation. Costa Rica, next to El Salvador, is the smallest of the six countries, but it is a strong, united nation. Panamá, a country of small population, is of importance because of the Panamá Canal owned by the United States. You will learn about the colony, British Honduras, later in this book when you study the European colonies in Latin America.

Why have the countries of Central America remained as small, independent countries? Why have they not united and formed one strong nation?

Lack of trade. Trade often brings neighboring countries closer together, but in Central America trade between the different countries did not develop because they raised almost the same commercial crops. Their trade has been with distant countries, chiefly the United States. Even today one capital city is without a railroad. Only recently have good highways been built across some of the national boundaries.

Different groups of people. The Indian tribes that settled in Central America scattered in small groups over the land. Later, the Europeans settled where there were already Indians who could be used as laborers on large estates. Therefore even today the densely settled sections of Central America are small and scattered and the thinly settled sections large. You can see this on the population map on page 11. The groups of people are not separated by barriers that are very hard to cross but instead by vast stretches of land having few inhabitants.

The inhabitants of Central America are different from country to country. Guatemala is an Indian country. No other country in Latin America has so

large an Indian population for its size. Costa Rica, farther south, has mostly white people, who are descendants of the early Spanish settlers. In the other countries the people are chiefly mestizos. Negroes have also settled in Central America, chiefly on the warm, wet lowlands along the Caribbean coast. The people in each group live in much the same way as their own ancestors did. Because each group is separated from the others, they do not understand the ways of living of their neighbors.

Thus differences among the people and their ways of living, rather than land or water barriers, have kept these small countries from forming a single nation. Indeed, these differences have kept the inhabitants of most Central American republics from becoming united even within their own countries. In El Salvador the greater part of the land is densely settled. But in each of the five other countries are groups of people separated by wide stretches of land with few inhabitants. These groups have usually not agreed as to how their country should be run.

Every day Indian women spend much time weaving gay, colorful material for clothing.

HOSMER FROM CUSHING



Central America on the Map

The map on page 16 shows you that Central America lies entirely in the tropics of the northern hemisphere. Notice that Central America extends south-eastward from México to the mainland of South America. Locate the colony, British Honduras. Next find each of the six independent countries. Nicaragua, Costa Rica, and Panamá have coasts on both the Atlantic and Pacific sides. Honduras has a long Atlantic coast but a short Pacific coast. Just the opposite is true of Guatemala. El Salvador is on the Pacific coast and at its nearest point is over a hundred miles from the Atlantic.

Three regions. The land of Central America is divided into three chief regions. Find on the map a central strip of highlands, a strip of lowland bordering the Caribbean Sea, and a strip of lowland bordering the Pacific Ocean.

The central highlands include some areas of wild country occupied by few, or no, people and other areas of farm land with many people. How many of the six capital cities lie in the highlands?

The Pacific coastal lowland is between twenty-five and thirty miles in width at the border between México and Guatemala. Near its southern end, before reaching El Salvador, it becomes very narrow.

The Caribbean coastal lowland extends into three deep valleys in the highland, each of which is drained by a river. All three of these valleys are low, rainy, and warm, and are covered with a dense tropical forest.

In southern Nicaragua the highland is divided by the Nicaraguan Lowland.

This extends northwestward from eastern Costa Rica all the way to El Salvador, thus connecting the Caribbean and the Pacific lowlands. The chief centers of population in Nicaragua are on this lowland (see the map on page 11). Are the centers of population of the other Central American countries in the highlands or on the lowlands?

Separated groups of people. Transportation routes in the highlands reach from the densely inhabited areas to the sea. But until recently only a few of these areas were connected with others by rail or highway. Short sea routes have been used rather than routes along the shores or through the highlands.

Even today only a few of the railway lines connect with one another. Parts of the Pan American Highway have been completed, but one cannot yet drive on it all the way to South America. In which countries does the highway reach the capital city?

The canal route. Next find the narrowest part of the Isthmus of Panamá. Notice that the Panamá Canal was dug across this part. Usually it takes from eight to ten hours for a ship to pass through the canal.

SELF-SUFFICIENT COMMUNITIES

In the highlands of Guatemala are small villages inhabited by Indians who know little of the outside world. Corn is the chief crop grown. Although the villagers go regularly to fairs and markets, each community is self-sufficient.

Simple ways of living. The people see little of the outside world except the



HERSEY FROM CUSHING

An Indian festival in Guatemala on the shore of beautiful Lake Atitlan. This lake is located in a basin surrounded by volcanoes such as those we see in the distance. Some are active.

road they take to market. In each village there may be a priest and a few merchants who are mostly of European descent, but almost all of the people are Indians. They live much as the members of their tribe have lived for centuries. They do not understand the white man's urge for profit. They do not try to improve their farms and raise crops to exchange for factory goods that would make their lives more comfortable.

Guatemalan Indians. Guatemala's highland is larger and higher than that of any other Central American country. The Indians living here are descendants of the Mayas, who were highly civilized Indians long before Columbus discovered America. They are subsistence farmers. Each family raises its own crops, weaves its own cloth, and makes its own pottery. The houses in the Guatemalan villages are usually built of adobe, pine wood, and grass thatch.

A market town. On the map, page 16, locate the market town of Chichicas-

tenango. Indians from near and far go to market in this town once or twice a week. As the morning sun rises over the mountains, Indian families follow the long trails leading to the city. Besides baskets of food, perhaps tortillas and black beans, to eat during the day, they carry products which they expect to sell. Some carry beautiful cloth which they have woven; others, surplus eggs, vegetables, or fruits. The women balance big baskets on their heads so carefully that nothing they are carrying falls out. Sometimes they carry live chickens or a turkey in a deep, flat basket woven from grass.

Though Guatemala is in the tropics, the air is always comfortably cool in the high country around Chichicastenango. After the chilly nights, the air does not warm up until late in the morning. Even in the afternoon, the air is not uncomfortably warm, and it is cool in the shade.

Chichicastenango is a town of low, whitewashed adobe houses with red tile



WATSON FROM GENDREAU

A Guatemala woman feeds her sheep. Why do you think the hillside has been terraced?

roofs. Around the town are deep canyons, but the town itself is on a gentle slope overlooking open plains. Narrow cobblestone streets run between the rows of houses. People coming to market in the central plaza enter the town along every road and path leading from the hills.

Many Indians wear the bright costumes of their particular tribes. The men of one group, who live back in the hills, wear long, loose trousers of red and white, striped material. The men of another group wear black woolen shirts embroidered in colored designs. The Indians of each tribe take pride in wearing the kind of clothing which the members of their tribe have worn for hundreds of years. If you know the different costumes, you can tell just what parts of the highland the Indians come from. Some, however, have given up their native costumes and wear clothes made of blue denim and cheap cotton goods.

As the people talk in the market, you can hear many Indian *dialects*, or slightly different forms of the same language. The Indians continue to speak the dialects of their ancestors. In some villages

there are no schools which the children can attend.

In the market there are different lanes for different kinds of products. One has hand-woven blankets, while another has water jars and other pottery. In the food lane women weigh grain, vegetables, and fruit, or make tortillas over open charcoal fires.

Now the shadows lengthen across the market place. The Indians turn to the upland trails that will lead them home. By twilight all have gone, and the plaza is deserted.

Indians and whites. The scattered and self-sufficient Indian communities of Guatemala have little to do with the government of their country. It is mostly in the hands of the white people.

COFFEE FARMING IN CENTRAL AMERICA

In Guatemala and Nicaragua there are large coffee plantations owned mostly by men of European descent. They are educated people and many of them are wealthy, with incomes large enough for them to travel in other countries. Coffee is, of course, raised as a commercial crop.

On the plantations the owner and his family live in the *casa grande*, which means the "big house." Indian laborers do the work on the hacienda. In return the landowner provides the laborers with their living and sometimes with money. With cheap labor, the owner usually receives a good income from his plantation.

The coffee tree. Coffee grows on trees. The coffee tree is not native to America but at one time grew only in Arabia and Ethiopia, countries in the eastern hemisphere. The first country in Central America to raise coffee was Costa Rica.

If you were to visit a coffee plantation, you might see blossoms, buds, and fruit on the trees at the same time. The tops of the leaves are dark green and waxy-looking; underneath they are lighter green. Clusters of delicate white flowers, which last for only a few days, grow where a leaf joins its branch. Soon clusters of berries appear in place of the flowers.

A single plantation has many acres of these trees with their fragrant blossoms. When the fruit first appears, it is a fleshy green berry. As it grows larger, it turns yellow and then red. When it becomes cherry red, it is ripe and ready to be picked. Coffee berries contain two seeds, or beans, growing with their flat sides face to face. Since the trees keep blooming most of the year, green and ripe berries may be seen on a tree at the same time.

Preparing coffee for market. Three times a year the workers go through the groves and pick the ripe coffee berries. Later these are soaked in water in order to soften the skin and the sweet pulp around the beans. The ripe berries float; the green ones sink to the bottom. The ripe berries, while still wet, are taken to the *pulping house*. Here they are put through a machine that removes most of the outside pulp without crushing the coffee beans. Next the beans are washed in large open tanks filled with water, in which they remain for about twenty-four hours. Any sugary pulp clinging to them is loosened.

Afterwards they are dried in large, shallow trays open to the sun and air. The Indians rake the beans back and forth so that they will dry evenly. If necessary, the coffee is protected against rain. It takes two or three weeks in the sun to dry the coffee beans thoroughly.

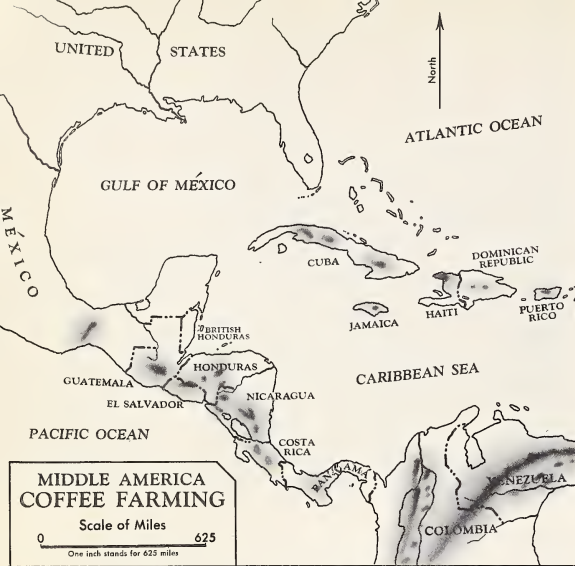


EWING GALLOWAY

Coffee beans are spread on the ground with large rakes. When dry, they are sorted and shoveled into piles, then bagged for export.

EWING GALLOWAY, HANCOCK FROM GENDREAU





The dried coffee beans are put through another machine to remove the layers of outside skin. Then the beans are packed in bags for shipment to other countries. The greater part of the coffee exports from Central America goes to the United States.

Location of coffee farms. Notice on this map that coffee farms are found in every country of Central America. El Salvador has been called a one-crop country, for coffee is the only product that is exported in large quantity. It is raised on both large and small farms. Guatemala is the sixth most important coffee-growing country in the world.

Coffee is also the chief crop in Costa Rica. Here, however, the coffee is raised on small farms in the highlands. The owners are white, and their few hired laborers are white. The population of Costa Rica is almost entirely white or mestizo, and most of the white people live in the highlands and raise coffee. Unlike the people of Guatemala, all of the people of Costa Rica have a share in its government.

Coffee of the best flavor is produced



where the temperatures average between sixty and seventy degrees all during the year. The trees will not grow in areas where there are frosts. Though they will grow where it is warm, they will not yield so large a crop or such good berries. In Central America, coffee is raised on the lower mountain slopes where the rain comes mostly during one season. Here from May to October are clouds, dampness, and heavy rains. But from November to April the sun shines almost every day. The high mountain slopes in Central America are too cold for coffee trees.

THE BANANA LANDS

Almost all our bananas come from warm countries south of the United States. Bananas are raised all around the Caribbean Sea, and, in Central America, banana plantations have also been laid out along the Pacific coast. The larger plantations are found in Honduras, Guatemala, and Costa Rica, but bananas are also grown in Panamá and Nicaragua, as you can see on the map.

Clearing the land. Less than a century ago the eastern coastal lowland of

Central America was swamp and tropical rain forest all the way from Yucatán to Panamá. Tropical trees grew in swamps with a tangle of branches and vines matted about them. The rainy coast was unhealthful, because insects that lived in the swamps spread many kinds of disease. The people who lived in the highlands thought these lowlands were not fit to live in.

Then a large fruit company, owned and managed in the United States, brought workers to the lowlands to clear the land and to plant bananas. Thousands of acres of low swamp and forest land were cleared of underbrush. Ditches were dug to carry off the water. Railway lines were built from the plantations to seaports on the Pacific and the Caribbean coasts. At the seaports piers were built where steamships could dock and be loaded with bananas.

Providing laborers. Today some of the lowlands are covered with thriving banana plantations. Some have over a thousand acres of land planted in bananas. An American overseer is often in charge of the plantation. He and his

Workers on the Guatemala banana plantations often live in primitive thatched huts.

HERSEY FROM CUSHING



family live in a pleasant, comfortable bungalow, and his office is in a separate building near by.

Planting bananas. The bananas are planted in partly cleared land. Pieces of the root of the banana plant are used for seed. Each piece weighs three or four pounds and has at least one "eye" similar to that of a potato. The root, eye down, is put into a hole about seven inches deep and covered with earth.

Cleaning the fields. Three months after planting, the banana fields must be cleared again. The laborers cut down the weeds with machetes and clear away the branches of the fallen trees, which might choke the young plants. The banana shoots are also thinned out, leaving only a few of the many shoots that have sprung up from each banana root. Otherwise the plants would be too crowded.

How the plant grows. In the tropics many plants grow to a great size. Although the banana plant is not a tree, it grows from fifteen to thirty feet tall, with a stem from eight to sixteen inches thick. The stem looks like a tree trunk, but it is

Spraying bananas in Guatemala. Notice that the bananas in the bunch point upward.

JAMES SAWDERS—COMBINE





HERSEY FROM CUSHING

Bananas are usually washed before they are shipped in order to remove the poison that has been sprayed on them to kill insects. Then they are transported by train to seaports.

soft instead of woody. It is made of leaves wrapped tightly around each other. Out of the top of the plant grow other leaves, eight to twelve feet long and about two feet wide.

By the seventh or eighth month a stalk, which is to bear the fruit, pushes itself up through the hollow center of the mass of leaves. On the end appears a long flower bud consisting of thick, overlapping purple petals. As each petal opens, it shows a row of little purple flowers tipped with yellow. From these flowers develop the young bananas, tiny and pointing downward. As the weight of the bunch bends the stalk, it begins to turn down, and the bananas point upward instead of downward as you see them in stores.

How bananas are harvested. Bananas are usually cut when they have reached their full size but are still green. A cutting crew is usually made up of three men, the cutter, the backer, and the mule man.

The cutter carries a long pole with a knife at one end. With this knife he nicks the stalk of the plant a few feet below the bunch of bananas. The stalk

bends where it has been cut, but the cutter holds it up with his pole to keep the bunch of fruit from falling. The backer lets the bunch rest on his shoulder. Then the cutter whacks it from the tree with his machete.

The mule man loads four bunches of bananas on the mule, two on each side. He carries another bunch on his padded shoulder. The bananas are then carried a short distance to a station where they are loaded into tramcars drawn by mules and hauled to the railway.

Each plant bears only one bunch of bananas and after this has been cut, the plant itself is cut down near the ground. While it rots and fertilizes the soil, young shoots spring up from the old root and produce new plants.

How bananas are transported. The bananas are started on their journey to market on the very day they are cut. At the seaports each bunch of bananas is inspected. The good bunches are taken to the ship that is to transport them to a foreign country. They are loaded into the hold, where the fruit is kept cool during the voyage. Since the fruit ripens at

all times of the year, only a part of a crop is cut and shipped at any one time. Thus ships are kept busy all year carrying cargoes of bananas to ports in many countries, especially the United States.

How small farms grow bananas. Besides the large plantations run by the fruit company, smaller farms also produce bananas and sell them to the company. If people own land and know how to grow bananas, the company will lend them money for improving their farms. When the owner sells his fruit, he repays the loan.

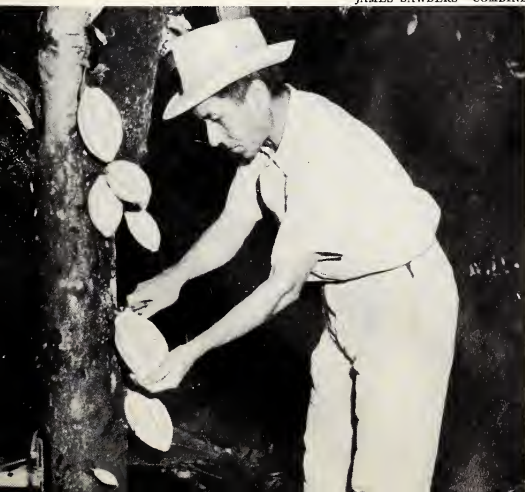
OTHER FARMS AND THEIR PRODUCTS

Cacao plantations. Unlike coffee and bananas, *cacao* is native to the western hemisphere. This small evergreen tree produces cocoa beans, the kernels of which are made into either cocoa or chocolate. The pods that hold the beans grow from the trunk and the large branches. Twice a year the trees bear heavily, although the beans ripen all through the year.

Cacao grows only in the rainy tropics. Cacao plantations are found in many areas in the Caribbean region. These plantations, some large, some small, are

Cacao beans are obtained from large pods that grow from the trunks of cacao trees.

JAMES SAWDERS—COMBINE



usually on the lower slopes of valleys on the coastal plains. Cacao has been planted on some of the lowlands in Costa Rica where banana plants had become diseased and no longer brought any profit to their owners. Most of the workers are descendants of the Negroes who came here to work on the banana plantations.

At one time the countries of tropical America raised nearly all the cacao trees in the world. Later the tree was planted in Africa, and now the largest part of the world's cacao comes from the eastern hemisphere. But the cacao raised in Costa Rica and Nicaragua has as fine a flavor as that grown anywhere in the world.

Other commercial crops. While coffee, bananas, and cacao make up a large part of the exports of Central American countries, they are not the only commercial crops raised. Some of the others are cotton, sugar cane, tobacco, and coconuts.

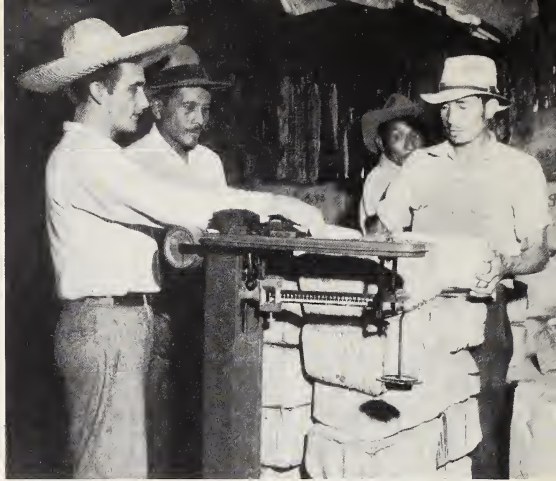
GRAZING LANDS

There are large cattle ranches in all the Central American countries. In the valleys and foothills of Costa Rica, back from the Pacific coast, the cut-over forest





Chicle gatherers move about the forests and must live in crude huts that are easily built. Chicle is often pulled like taffy before it is molded into blocks and weighed for shipping.



JAMES SAWDERS—COMBINE

land makes good pasture. There are also great stretches of grassland on the drier areas of the highlands of Honduras. However, the Central American ranch owners do not depend on natural grass alone. Instead, they clear away small patches of woodland and plant grass seed in the cleared area, making pastures on which cattle can be fattened. The grass that grows from the seed has more food value than the coarse, wild, natural grass. The owner grazes his calves on the natural grass until they are full grown and then fattens them for market on the planted pasture. The ranch laborers are usually mestizos who work for very low wages.

Every year the ranch owner sends his steers, perhaps as many as five hundred, to the nearest market city to be sold for beef. In some regions the animals are transported to market by truck, and in others driven there on foot.

The owners of large ranches in Central America use their pastures to make money, and many have become wealthy. Their cattle supply food for the people, especially the city dwellers, and Nica-

raguan cattle are exported. But cattle are not so important as coffee and bananas in foreign trade.

FORESTS OF CENTRAL AMERICA

Kinds of forests. Central America is becoming more and more important for its forest products. Because Central America, like México, has many different climates, it has different kinds of forests and plant life. Heavy tropical rain forests grow on the Caribbean coastal lowlands where the climate is warm the year round and the rainfall heavy. In these forests many kinds of trees with broad leaves grow close together like overgrown weeds. The thick network of leaves overhead shuts out the sunlight, so that it cannot reach the ground. Therefore not even grass can grow between the tree trunks. Sunlight can reach the ground only in forest clearings or along the streams, and here thick brush grows between the tree trunks. Men can hardly chop their way back from the streams through the brush.

On the Pacific coast, where the rain-

fall is not quite so heavy, the trees grow farther apart. Since the sunlight reaches the ground in these areas, it is everywhere covered with a tangle of vines, creepers, and other undergrowth.

Scrub forests are found in Guatemala in a region of lighter rainfall. The trees are small and spaced far enough apart so that they provide but little shade. Grass grows between them. During the growing season the trees are a mass of foliage. When the dry season comes, the leaves of many of the trees fall to the ground and the trees stand bare. Trees that shed their leaves all at once each year are known as *deciduous* trees. In a tropical scrub forest there are not so many different kinds of trees as in a tropical rain forest.

On the map on page 21 you can see that mountain vegetation covers much of the central highland. At lower elevations in the highlands you will find fewer tropical trees and more oaks and trees of other kinds that grow in the middle latitudes. At higher elevations, where it is much colder, there are pine forests. They grow, however, only as far south as the break in the highland. Where is this break located?

Uses of forests. In the tropical rain forests of Latin America, lumbering is sometimes carried on in a small way. But the most common use of these forests is simply the gathering of products from the forest. *Chicle*, used in making chewing gum, is gathered in the tropical forests all the way from southern México and British Honduras to Brazil.

Chicle. The part of chewing gum that is left after the flavor is gone is chicle. Chicle is made from the milky juice of the *sapota tree*, which grows wild in the tropical rain forests of Central America.

The juice is gathered by tapping the tree during the rainy season when trees yield the most sap. Often paths to the trees have to be cut through the dense woods. The gatherers build huts of palm trees to live in while gathering the sap from the sapota trees scattered through their part of the forest.

Chicle is cooked until it thickens, and then it is poured into molds to harden. The slabs of chicle are shipped to the United States where they are used in the manufacture of chewing gum. Central America exports millions of pounds of chicle every year. From the forests in Guatemala chicle is flown by plane to the coast town of Puerto Barrios.

Quinine. Another product obtained by collecting is the bark of the *cinchona tree*, from which *quinine* is obtained. Quinine is a drug used to treat malarial fever. In Guatemala there are more than a million cinchona trees old enough to make it profitable to gather the bark.

Mahogany. Other native trees in the forests of Central America are valuable for their wood. Mahogany trees grow in the forests along the coast from southern México to South America, but seldom,

It is cheaper to transport chicle by airplane than to build roads through the forests.

HANCOCK FROM GENDREAU



if ever, are more than two trees found on an acre of forest land.

Balsa. Another useful tree, the *balsa*, grows in Central America. Balsa wood weighs less than any other kind of wood. A man can easily carry a large log on his shoulder. The tree grows very fast and can be cut down easily. Balsa wood is used in making life rafts, gliders, and airplane models, because it is strong but light in weight.

Peruvian balsam. In the mountains of El Salvador grow the only large forests of *Peruvian balsam* in the world. From this tree is obtained a sticky, dark brown liquid that is used in making perfumes and in treating skin diseases and sores.

PANAMÁ AND THE CANAL

The Isthmus of Panamá. Before 1914 there was no waterway joining the Caribbean Sea and the Pacific Ocean. Ships going from the Atlantic to the Pacific had to sail thousands of miles around South America.

Several European nations, particularly Great Britain, were interested in building a waterway across the isthmus for their ocean-going ships. A canal would save much time and money for merchant vessels sailing to the Pacific. In time of war, the time saved in moving warships between the two oceans would be especially valuable. After the Suez Canal, the world's first great canal, was completed, more and more attention was given to the idea of a canal across the Isthmus of Panamá.

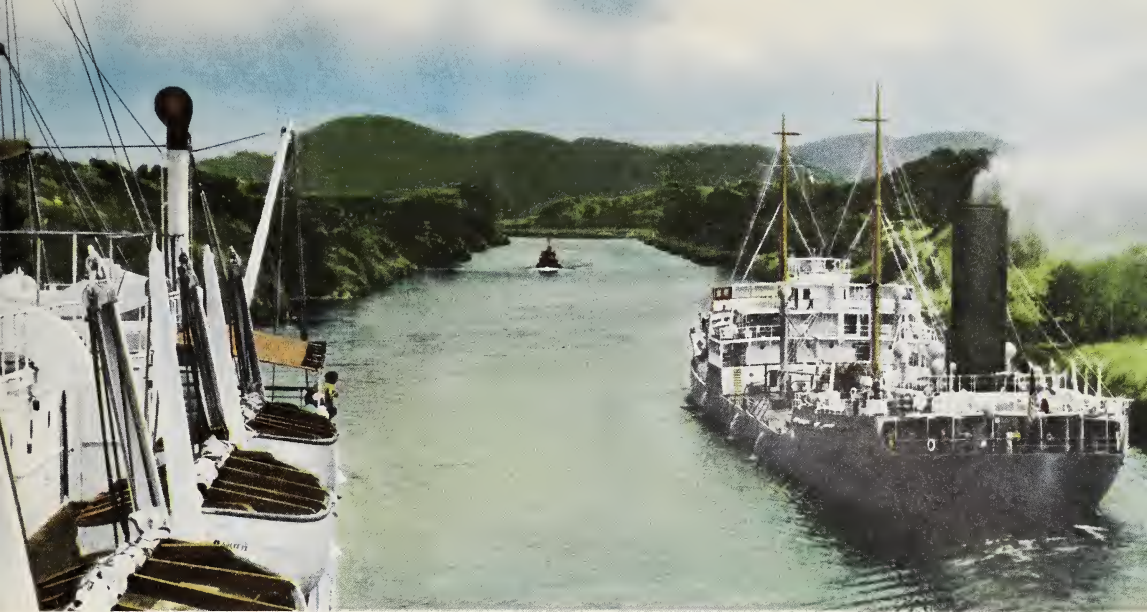
Difficulties to be overcome. At the isthmus it was hard to dig a canal. In the mountains and tropical forests millions of fire ants tortured men and animals with bites like red-hot needles, and

thorns and sharp-pointed vines and trees cut men's hands and bodies. On the muddy banks of the streams a man or mule might sink to his death into a swamp. Creepers and flowering vines had twined themselves around the huge trunks of the forest trees. Often a path through this thick growth could be opened up only with an ax. Between May and December the rain rarely stopped on the Caribbean coast, and the ground was so wet that it seemed to slip away beneath one's feet. Millions of insects flew about in every opening of the woods. Poisonous snakes were a great danger to men who tried to cut their way through the vegetation. In the swamps and marshlands swarms of mosquitoes laid their eggs. The malarial mosquito, which flies only at night, bit people while they slept. Then fever raged among the people bitten, and many of them died. Workers who went into this dense wood became ill also of yellow fever, another dread disease carried by mosquitoes.

Early plans for a canal. Ferdinand de Lesseps, the Frenchman who built the Suez Canal, tried to dig a canal at Panamá but failed. In Panamá his men were stricken with disease and after making attempts for years, he gave up the idea of digging a canal here.

Following de Lesseps' attempts, the United States sent a group of engineers to the Isthmus of Panamá to learn all they could about the narrow strip of land across which a canal might be dug. But for some time nothing was done because the people of the United States showed little interest in such a waterway.

The need for a canal. In 1898 war broke out between the United States and Spain. United States battleships in the



PHILIP GENDREAU, N.Y.

Part of the Panamá Canal. *The channel is wide enough to permit two large ships to pass each other. The dense tropical forest had to be cleared away in order to build the canal.*

Pacific were needed in the Atlantic. When the *Oregon*, which was in Pacific waters, was ordered to the Atlantic, it took two months to steam around South America and reach our east coast. Every day the newspapers reported how fast the *Oregon* was returning and how many more days or weeks it would be before it would reach home waters. The people of the United States now saw the need for a canal across Panamá.

Agreements made with other nations.

The United States had first to obtain the right to build the canal. It paid millions of dollars to the French company for its work and materials left in Panamá. Until this time the Isthmus of Panamá had belonged to Colombia, the neighboring country in South America. But Panamá now became independent and set up its own government. The United States paid the Republic of Panamá millions of dollars for the land now called the Canal Zone and still pays rent to the republic

every year for this zone. The Canal Zone is a strip of land five miles wide on each side of the canal.

Fighting disease. At about the time when the United States began work on the canal, doctors discovered how malaria is carried from person to person. They proved that malaria is carried from one person to another by the bite of one kind of mosquito and that mosquitoes lay their eggs in standing water. If these discoveries had not been made, it would have been impossible to overcome malaria in the Canal Zone.

The United States placed Colonel William C. Gorgas in charge of the task of making the Canal Zone a healthful place in which to live and work. Gorgas was chosen because he had taken part in stamping out yellow fever in Cuba.

Soon after the work on the Canal was begun, nineteen people died of yellow fever. The workmen became afraid and rushed to the ports to board ships for



home. They were unable to get transportation and finally went back to work.

At the direction of Gorgas, the workmen dug ditches to drain some of the swamps and filled low places with earth. They cut down brush and jungle plants and cleared them away. They sprayed oil on standing water where mosquitoes might lay their eggs. In a few months deaths from yellow fever were fewer and fewer in the Canal Zone. Today this area is known throughout the world for its healthfulness.

Building the canal. General George W. Goethals, the chief engineer, did not plan to dig the canal down to the level of the sea. That would have been much too slow and costly. Instead Goethals decided that ships could use the wide parts of the Río Chagres. Find it on this map. First he dammed up the Río Chagres to make a lake, Gatun, which now supplies the water for much of the canal. But since Gatun Lake is eighty-five feet above sea level, there had to be some way for ships to reach it. *Locks* were built to raise and lower ships to and from Gatun Lake.

How a lock is used. The locks in the canal are deep enough, wide enough, and long enough to hold a large ship. At both ends of each lock are watertight gates. When a ship on its way up to Gatun Lake reaches the first lock, it is pulled very slowly into the lock by small electric engines. The gates are closed behind the ship, and water is pumped into the lock until the ship is raised up to the level of the second lock. Then the gates ahead of the ship open, and the electric engines pull the ship into the second lock.

From Gatun Lake to the other ocean, the ship must, of course, be lowered to sea level. The trip down is the opposite of the trip up. This time, water is let out of each lock until the ship reaches the level of the next lock below.

A passage for all nations. Though the Panamá Canal was built by the United States, it is used by the ships of almost every nation in the world. The tolls have already amounted to more than the cost of building the canal. However, a large part of the income from the tolls must be used to cover expenses such as the cost of dredging and protecting the canal, of the electric power to open and close the gates, and of the electric engines that pull ships through the locks.

The Canal Zone. The Canal Zone is managed by our Department of the Army. If you were to go to the Panamá Canal, you would find it guarded by United States sentries and by squadrons of airplanes near the two entrances. In time of war or danger of war the government may refuse to let ships go through.

On the map find the railroad that crosses the Canal Zone between Colón and Panamá City. On the train less than an hour and a half is required to

cross the isthmus. You can see on the map that a highway also has been built across. Notice that Colón on the Caribbean Sea is farther west than Panamá on the Pacific side. How can that be?

The Republic of Panamá. The country of Panamá is an independent republic. Its population is smaller than that of any other independent country in Latin America. Over half of the people are Indians or mestizos, and almost a third are Negroes. People live in scattered communities in the lowlands on both the Caribbean and the Pacific sides.

Panamá City. About a fourth of the inhabitants of the Republic of Panamá live in Panamá City, the capital. Many Americans live there, and many men of the United States Armed Forces, as well as visitors from all over the world. The city does not belong to the United States but is near the Pacific entrance to the canal, just outside the Canal Zone.

Because of the canal much trade passes through Panamá City, making it the largest port city in Central America. Near the city are docks, which were built by the United States. From these are shipped many of Panamá's exports, par-

ticularly bananas, cacao, gold, coconuts, and meats. These exports, however, do not equal the great quantities of imports that reach the republic, for the most part, through Panamá City.

CITIES OF CENTRAL AMERICA

Central America has no industrial cities but depends on imports for most of its factory goods. Its cities are chiefly busy with trade or with government. However, the people of the various countries are trying to build industries.

Guatemala City. Guatemala City, the capital of Guatemala, is located in a high valley surrounded by mountain peaks. These mountains on the southern border of the highland include many volcanoes. In colonial times one of the highest of the volcanoes buried the old capital city under lava and large stones. Then the government was moved to Guatemala City.

It is a modern city with large buildings, well-paved streets, and parks. Here on a market day you will see Indians going to the great market place near the cathedral. Everything is sold there, from food and

PHILIP GENDREAU, N.Y.

This photograph was taken from a ship being towed into the last locks before continuing on to the Pacific. Notice the gates opening just in front of the ship.



clothing to toys and trinkets. Around the city are the estates of some of the people who have helped to build it.

San José. The capital and largest city of Costa Rica, San José, lies in the highlands surrounded by mountains. Modern shops line its wide streets. Cool, shady parks, which are fragrant with flowers, add to its beauty. There are many schools in San José, for Costa Rica believes in teaching its people to read and write.

Costa Rica is a peaceful country. The people as a whole elect their officers and make the laws. Such a form of government, of course, is called a democracy. Education and democratic government have helped the people of Costa Rica to change idle land into prosperous agricultural country.

IMPORTANCE OF CENTRAL AMERICA

As we have seen, Central America covers a small part of the globe but is important because of its position. It includes the shortest water route from the North Atlantic to the Pacific Ocean, a route which is one of the crossroads of the world. Also, important tropical crops such as bananas, sugar cane, coffee, and cacao are produced for export, chiefly to the United States. Forest products—hardwoods, chicle, and parts of plants from which useful drugs are made—are also gathered.

Central America still has some idle land that could be used. However, this is rapidly being put to use to produce income for its owners and food, clothing, and shelter for many people.

Guatemala City. Indians sell Christmas trees and other wares in front of the cathedral.

BOESEN FROM CUSHING



Do You Understand Your Geography?

At the top of your paper write six headings: Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panamá. Copy each of the following under the name of each country in which you would expect to see it.

banana plantations	Río Chagres
scrub forests	haciendas
subsistence farms	sapota trees
an adobe house	mahogany trees
large coffee	balsa trees
plantations	cacao plantations
small, modern coffee farms	Peruvian balsam trees
large cattle ranches	the Nicaraguan Lowland
cornfields	

Now make a list of all the things you eat or have in your home in which a product of Central America may have been used. Here are two examples: chocolate cake, a mahogany piano. See how many things you can find.

QUESTIONS ON WHAT YOU HAVE READ

1. Why did the Europeans settle where Indians were to be found? How has the location of the early Indian settlements affected the location of the population in Central America today?

2. Why is there little or no trade between the countries of Central America?

3. What do we mean when we say that the Indians of Guatemala live in simple ways? State at least three things that make for simple ways of living.

4. Why is coffee grown on the lower mountain slopes of Central America in-

stead of on the high mountain slopes?

5. How does the Panamá Canal save many nations time and money?

6. How has the land called the Canal Zone been changed by men?

LEARNING FROM MAPS

1. Locate and name the country in Central America which extends farthest north; the one farthest east; the one farthest west; the one farthest south.

2. Which country borders only on the Pacific Ocean?

3. Trace the route of the Pan American Highway. Do you see a reason for its location? (Clue: Look at the population map on page 11.)

4. In what country does the Pacific coast lie east of the Caribbean coast?

NAMING THE COUNTRY

Which country:

- Is the largest in Central America, is inhabited by mestizos, and is very poor?
- Is densely populated and located entirely on the Pacific side of Central America?
- Is prosperous, is densely settled, and is strongly united?
- Is a British colony?
- Exports bananas and makes much use of air transportation?
- Is inhabited chiefly by mestizos, has a small population, and is important chiefly for a man-made waterway?
- Has the largest population and largest highland region?



LAVARRE FROM GENDREAU

In southern Chile wood is used for many purposes. How many can you see in this picture?

South America

Perhaps you have thought that to travel from North America to South America you would go directly south. However, South America lies farther east than North America. If you flew straight to the south pole from the city of New Orleans at the mouth of the Mississippi River, you would not pass through South America at all, but the greater part of your route would cross the Pacific Ocean.

If you were traveling west from Portugal across the North Atlantic Ocean and

had completed about half the trip, you could then reach South America by going directly south. Notice on your classroom globe that South America looks like a big triangle with one of its corners far to the east of North America.

A trip south. If you should sail south from an eastern port in the United States all the way to the tip of South America, you might stop on the way at ports in the West Indies or, perhaps, on the northeast coast of South America. On the map

on page 17, locate such a port. Day after day the noontime sun would be higher in the southern sky until one day it would be directly overhead. Your shadow at noon would become shorter and shorter until it would be directly under your feet at noon. You would then be somewhere in the tropics, a broad belt of land and water that lies on either side of the equator. The tropics extend from $23\frac{1}{2}^{\circ}$ of north latitude to $23\frac{1}{2}^{\circ}$ of south latitude. As you know, the parallels which mark this broad belt have been given special names. The parallel at $23\frac{1}{2}^{\circ}$ N is called the Tropic of Cancer, and that at $23\frac{1}{2}^{\circ}$ S, the Tropic of Capricorn. Notice that the wide part of South America lies between the equator and the Tropic of Capricorn.

As you sail on straight south, the sun is not quite so high at noon. It is behind you in the northern sky. Early in the voyage your noontime shadow pointed northward because the sun was in the south. Now the sun is in the north, and your noontime shadow points southward. It becomes longer each day as you go south. South of the Tropic of Capricorn people must always look toward the northern sky to see the noontime sun.

On the map of South America (page 57) locate Uruguay, the country lying just south of 30° S. Not until you reach this latitude will you notice any important change in the temperature. Then slowly the weather becomes cooler, but not much cooler if you visit the southern hemisphere in its summer. South of 40° S, however, a cold ocean current makes the weather cool, even in summer. You have a few days of stormy weather while you sail around Cape Horn. Now and then through the fog you catch glimpses of rocky islands. Their high tops are covered with snow.

When you sail northward again along the west coast, you notice that the temperature is mild and stays much the same all the way from the coast of middle Chile until you reach Ecuador. Off the coast of Ecuador, the weather suddenly grows warmer. The reason for this has to do with the Perú Current, which flows northward along the coast of Perú. This cold current cools the air above it. When the weather becomes warmer, you have passed beyond this current, which turns westward at about latitude 5° S. As you sail north along the coast of western Colombia and Panamá the warm air feels hot because it is so humid.

After you finish this trip, you should remember that some Latin American countries lie north of the equator, that others are crossed by the equator, and that still others lie entirely south of the equator. But the greater part of Latin America is in the tropics and the latitudes just south of the tropics. Notice how narrow South America becomes beyond 40° S.

Glaciers at the southern tip of South America move slowly down the valleys to the sea.

EWING GALLOWAY







SOUTH AMERICA

Cities

- **SÃO PAULO**..... Over 1,000,000
- **Rosario**..... 500,000 to 1,000,000
- **Caracas**..... 100,000 to 500,000
- **Callao**..... 50,000 to 100,000
- **Potosí**..... Under 50,000

☆ **Capital**

--- **Principal Railroads**

— **Principal Highways**

Plains

Mountain Basins

Plateaus

Hills and Low Mountains

High Mountains

Ice

Scale of Miles

0 370 740

One inch stands for 370 miles

South America on the Map

The map on pages 56-57 shows you that in South America there are three chief surface regions. On the west are the high Andes. On the east are the Brazilian and Guiana Highlands. In the central part of the continent lie the plains of three great rivers: the Orinoco, the Amazon, and the Paraguay-Paraná-Plata. Find each of these on the map.

A mountain barrier. When the early Spaniards began to explore South America from the Pacific coast, they soon came to the great Andes ranges. These mountains are higher than any others in the world except a few in Asia. At many points they can be seen from the Pacific Ocean, for like our own Coast Ranges they are close to the western coast. They reach more than four thousand miles from the shores of the Caribbean Sea to the southern tip of South America. Nowhere else in the world is there a chain of mountains which extends so far without a break. One of its peaks, Mount Aconcagua, is the highest mountain in the western hemisphere. Find it on the map. Most of the passes through the Andes are more than twelve thousand feet above sea level. This is much higher than all but a very few passes in North America.

The great ice sheets. During the great ice age, the southern part of the Andes was covered with a vast sheet of ice. Even today the high slopes just north of the Strait of Magellan are always hidden by ice. Here glaciers slowly move downward either to the ocean or to the lakes on the eastern and western sides of the range. As you go northward

from this region toward the equator, the weather becomes warmer. Glaciers are found at higher and higher altitudes. However, the Andes are so high that even near the equator there are small glaciers on the highest peaks.

Plains and highlands. No coastal plain runs along the Atlantic as in North America. Notice that the three great South American plains are separated by highlands. What highland separates the Orinoco Plain from the great Amazon Lowland? What highland lies south of the Amazon Lowland? Notice that the part of the continent which is occupied by plains is smaller in South America than in North America. This means that the area of good farming land is smaller than in North America.

Rivers and harbors. From the even coast line of much of South America, you can see that it has few good harbors. On most of the west coast, ships lie at anchor in the open ocean a mile or more offshore. They are loaded and unloaded by means of *lighters*, large open boats that carry freight.

In the northern part of South America is the Orinoco River, the delta of which covers hundreds of square miles. Most of this delta is covered with dense, tropical rain forests and is under water when the river overflows. This river and its branches are used only by a few river boats, because few people live in the surrounding region.

On the map locate the great Amazon River. This river with its branches drains almost a third of all South America. It is deep enough to allow ocean



MELS FROM CUSHING

Lighters carry goods to be loaded onto large freighters anchored off the coast of Chile.

vessels to sail all the way to the city of Iquitos in eastern Perú. Find Iquitos on the map and follow the Amazon from there to the sea. The Amazon River is navigable for ocean vessels farther upstream than any other river in the world. But it is not so useful as some smaller rivers because the land through which it flows is not productive. Later you will learn why.

Next locate the Paraguay-Paraná-Plata river system farther south in the central part of the continent. A river system includes a river and all its branches. Note that the Paraguay River is a branch of the Paraná River. The Paraná flows into a broad shallow *estuary*. An estuary is just the opposite of a delta. A river that has a delta builds land out into the sea. In a river that has an estuary the ocean tides go far up the mouth of the river. This estuary, where the current of the Paraná meets the tides of the Atlantic Ocean, is known as the Río de la Plata.

The *drainage basin* of a river refers to all the land from which the river receives

and drains off water. We call the high land which separates the water flowing into different river systems the *divide* or the *drainage divide*. The drainage basin of the Paraná River system includes all of Paraguay and large parts of Argentina, Brazil, and Bolivia. Only a few rivers in the world drain a larger area. Part of this area is well populated and very productive. Downstream, the Río de la Plata is the most useful waterway in South America.

CLIMATE AND VEGETATION

South America extends through the low and middle latitudes. The part of the continent which lies in the higher middle latitudes is much narrower than the part of North America which lies in those latitudes. South America south of latitude 40°S becomes a narrow finger of land reaching out into the vast ocean. Since ocean winds blow over the land, the winters here are never so cold as those of Canada or northern United States. Even Tierra del Fuego, at the southern

tip of the continent, seldom has freezing weather. However, in the warmest month the temperature is usually below 50° and is never high.

The west coast. Have you ever noticed that the climates of the world are arranged in patterns? Those on the west coast of South America as you go northward from the southern tip resemble those on the west coast of North America as you go southward from Alaska. On both coasts you pass first through a cool, rainy climate; then a climate like that of California, with mild, rainy winters and cool, dry summers; next a desert; and finally a humid climate again.

This rainfall map of South America shows you the differences in moisture on the west coast. Which of the four coastal climates is found in the longest strip? Notice that the southern part of the coast is broken by deep *fiords*, or long, narrow inlets of ocean between high cliffs. Antarctica, the land around the south pole, has been called the home of the blizzard. The neighboring ocean in the high and higher middle latitudes is one of the stormiest in the world. Heavy storms sweep across these deep fiords and the neighboring land.

The north coast. The northern coast of the continent has two dry sections with a very rainy section between. These dry sections are regions where the people cannot depend on the rainfall. Sometimes they have floods, but much more often there are drouths.

The east coast. The east coast as far south as the city of Buenos Aires has a climate that is generally warm and rainy. South of Buenos Aires, where the continent becomes narrower and narrower, the climate is not at all like that of

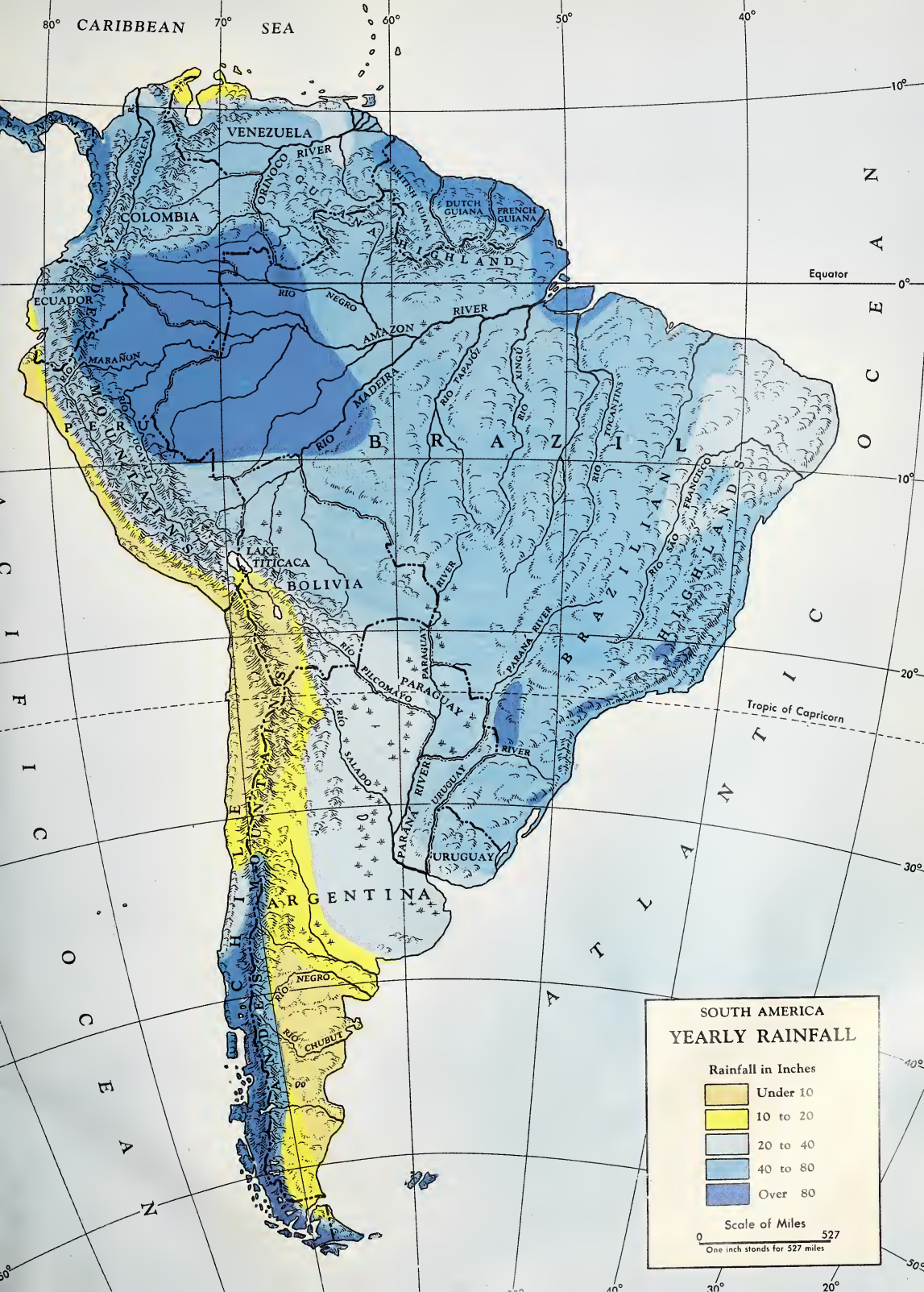
northeastern United States. The difference is caused by the nearness of the ocean. The temperatures are much lower in summer than in northeastern United States and much higher in winter. On the rainfall map locate the area where the desert extends to the east coast. This region is a stormy, windy part of the continent even though it receives very little moisture.

Tropical South America. Find the part of South America which lies in the tropics. This tropical section includes about three fourths of the entire continent.

In tropical South America are great differences in climate. Locate an area having over eighty inches of rainfall, then one having less than ten inches. Notice that somewhere in the tropics are areas which receive each of the other amounts of rain given in the key of the map. The differences in temperatures are just as great. The north coast is hot, the southern part of the desert on the west coast is cool and cloudy.

As you study the countries of South America, you will find that the highest temperatures are not found near the equator. Instead they occur during the summer months just between the middle and the low latitudes. You should not think of the tropics as being a very hot belt around the earth, but rather a moderately hot belt in which the temperature changes only a little from one season to the next.

The Andes. In high mountains are always found many different climates. This is true of the Andes for three reasons. First, the Andes rise high above sea level, and, as the altitude increases, the air gets colder. Second, some of the slopes receive much sunlight, while other slopes



are shady. Third, some slopes receive much more rain than others.

The high peaks of the Andes rise above the snow line even on the equator. As you go south from low latitudes, the snow line gets lower and lower on the mountainsides. It is lowest in the high latitudes. Near the equator you must climb about 15,000 feet to reach the snow line. But in Tierra del Fuego it is a little below 2,500 feet.

The deserts. The kind of vegetation that a region has is largely the result of its climate. You have seen that South America has many different climates.

Where the rainfall map told you that the rainfall is less than ten inches, you should expect to see desert on the vegetation map except in cool places where the land does not dry fast after a rain. On this map what kind of shading stands for desert? See whether the location of the deserts agrees with what you expected. These dry lands are mostly covered with low plants growing far apart. On the Argentine desert, along the east coast, dwarf trees also appear. On the west coast in northern Chile is absolutely barren land.

The grasslands. Where the rainfall is enough to keep grass growing but not enough for forests, we find grasslands. On this map three different kinds of grasslands are shown: *prairies*, *steppes*, and *savannas*. The kind of grassland found in any place depends on the climate.

Prairies. Where enough rain falls, tall prairie grass grows, but it is not like the prairie grass of North America. The tall South American grass grows in bunches, each bunch standing separately without forming a thick sod. What kind of shading on the map shows the prairies?

Find a prairie that borders a large desert. No trees grow on this prairie except along the streams.

Prairies make very good land for growing grain and pasturing cattle. The soil of prairies is usually rich in humus and will produce large crops of wheat, corn, and alfalfa. From the prairies of the world come large numbers of meat animals and most of our wheat. The large prairie region that you saw on the map is the most productive farming country in all Latin America.

Steppes. In the cool regions short or steppe grass completely covers the ground. Locate a narrow patch of steppe along the eastern front of the Andes. The steppes are drier than the prairies and are therefore not so good for crops. But steppes make good grazing for cattle and sheep.

Savannas. The third kind of grassland is the tropical savanna, which is found in our country in only a very small part of Florida. Notice on this map that there are several savannas in South America. A savanna is an area covered with coarse grass and scattered scrub trees. Ribbons of forest follow along the streams. During the dry season the grass becomes parched and brown, and the trees lose their leaves. When the rains begin, the trees send out new leaves, and the young shoots of grass make the ground velvety green.

Savannas are the poorest kind of grassland. During the rainy season, savannas have too much water. The heavy rains soak into the soil carrying away the minerals that plants need for growth. The ground becomes so damp that no more water can soak into it, and the rain forms pools of standing water. At this season many insects breed in the pools



and wet grass. Some of these insects cause diseases in men and animals. During the hot, dry season the savannas have too little water. The moisture evaporates rapidly, leaving the land very dry.

Forest and grassland mixed. South of the Amazon the map shows vast areas of forest and grassland mixed. In some of these, patches of forest grow in the midst of open grassy areas. In other areas, patches of grassland lie in the midst of a forest. In Brazil there is more forest than open grassland. Often it is hard to tell whether you are in a savanna or a scrub forest.

The forests. Locate the parts of South America that are rainy enough for forests. Almost half the area of the continent is covered by tropical rain forest. You will learn much more about this kind of forest when you study the large country of Brazil.

On the map, what does solid black stand for? On mountains one finds many different kinds of plant life because the vegetation changes as the altitude increases.

Ribbons of dense forest grow in the valleys of this savanna. How can you explain this?

STANDARD OIL CO. (N.J.) BY COLLIER



THE PEOPLE AND COUNTRIES OF SOUTH AMERICA

When South America was settled by Europeans, there were many more Indians there than in our country. Even today millions of pure-blooded Indians live in South America, and also millions of mestizos. Some areas are inhabited chiefly by whites and others by Negroes. Most of the South Americans make their living by farming and raising cattle and sheep.

The population map. Look again at the population map of South America (page 11). Notice that the densely populated areas are small and scattered. Where the land is left white, the area is not inhabited at all. Large parts of South America have scanty population or no population at all. More of the inhabitants live near or on the coasts than in the inner part of the continent. Is the great Amazon Lowland densely or thinly populated? Notice that the southern tip of the continent has few people. Remember that South America is not a thickly populated land and that vast areas of it have almost no people. But today the population of South America is rapidly increasing.

The countries. Count the independent countries in South America (pages 56-57). Find three colonies of European countries. On the map facing page 1, notice that most of the independent countries were settled by the Spanish. Brazil, the largest country, was settled by the Portuguese.

Which two countries front on the Caribbean Sea? Were they settled by the Spanish or by the Portuguese? In our study of the countries of South America we shall begin with these two.

Teaching Yourself Geography

Use the map on pages 56–57 to discover which country in South America is bordered by the Pacific Ocean on the west and the Caribbean Sea on the north. Then tell which country borders on the Caribbean Sea and the Atlantic Ocean, which ones border on the Atlantic Ocean, and which ones border on the Pacific Ocean. Which ones lie completely inland? Find a country that is long and narrow and one that is larger than any other. Which countries lie completely in the tropics? Can you tell which country is most densely populated? To which map will you have to turn?

WORKING WITH MAPS

1. Look at the map on pages 56–57. Name three large surface regions of South America. Name three great river plains.

2. Through how many degrees of latitude does South America extend?

3. On an outline map of South America draw a green line around the drainage basin of the Amazon River system. Draw a blue line around the Orinoco drainage basin. Draw a red line around the Paraguay-Paraná-Plata drainage basin. How many drainage divides do you see?

4. In traveling from México to South America do you go directly south, directly east, or south and east?

MAKING COMPARISONS

1. Compare the three kinds of grasslands: prairies, steppes, and savannas. How are they different and how are they similar?

2. Compare a tropical rain forest and

a desert; an estuary and a delta; a drainage basin and a drainage divide.

3. Compare South America and North America as to the following: the Andes Mountains and our own Sierra Nevada; the plains of South America and of North America; the climates along the west coasts.

A GLIDOGRAM

Each small x stands for a missing letter in a word. Write the words on your paper, using as a clue the meaning opposite each word.

Sxxxxx a region in which short grass covers the land
xOxxxxx an inland South American country

xxUxxxx a city in eastern Perú on the Amazon River

xxxTxxxxxx a seaport in Uruguay
xxxxH the direction of Brazil from Uruguay

Axxxxxxxxx the largest country in southern South America

xMxxxx a large river in South America

xxExxx xxxxx a large seaport in Argentina

xxxRxx ocean inlets between cliffs

xxxxIxxx large areas of ice
xxxxxCx the area between $23\frac{1}{2}^{\circ}\text{N}$ latitude and $23\frac{1}{2}^{\circ}\text{S}$ latitude

xxxxxxAx a country about in the center of South America



PHILIP GENDREAU, N.Y.

Along the edge of Lake Maracaibo one still sees a few simple dwellings built on wood piles like the huts of the Indians long ago. The roofs are thatched with palm leaves.

Venezuela and Colombia: The Two Caribbean Countries

In South America are two countries that front on the Caribbean Sea: Venezuela and Colombia. Find them on the map, page 56. In each of these countries a half or more of the population is mestizo. A small part is white and another small part Indian. The rest of the people are Negro or people of mixed descent.

Both countries are in the low latitudes near the equator, and both include large areas of lowland plain and high moun-

tains in which there are many mountain basins. This means that within these countries are many different climates and kinds of vegetation. Also, almost any crop grown anywhere in the world can be raised here.

You know that in middle-latitude countries such as the United States, the chief farm crops generally change as one goes from lower to higher latitudes. But in Colombia and Venezuela, the crops are different at different altitudes. In

southern United States cotton and citrus fruits are important commercial crops, while in most of Canada the growing season is too short for any except hardy crops such as wheat, barley, and potatoes. On the Caribbean Lowland rice, sugar cane, and cacao are the important crops. On the mountain slopes and in the basins above the lowlands coffee is the chief commercial crop, but fruits and vegetables are also raised. Farther up in the mountains are grains, first corn and then, higher still, wheat and barley. What food crop would you expect to be raised above the level of grains?

Venezuela. In northwest Venezuela is Lake Maracaibo, which is drained by a river flowing into the Caribbean Sea. When Columbus discovered America, a tribe of primitive Indians lived in this lake region. They lived in thatched huts built on wooden piles on the shores and in the shallow water of the lake.

These Indians obtained their food mostly by fishing. Sometimes a black sticky substance floated on the waters and would collect on the Indian's fishing nets. These primitive people did not know that the substance was petroleum and that beneath their houses was a great oil field, which would one day be very valuable.

Several years after the discovery of America, a Spanish explorer came to this lake village. He saw the huts resting on piles above the water and the Indians paddling their dugout canoes from door to door. He was reminded of Venice, an Italian city built on a group of islands and having canals instead of streets. So he called the land Venezuela, which means "little Venice."

Today vast quantities of oil are being taken from the field beneath Lake Mara-

caibo. Venezuela is the chief oil-producing country of Latin America.

Colombia. The other Caribbean country, Colombia, is named after Columbus. Ranges of the high Andes Mountains cover the western third of Colombia. Within this third are more different kinds of land than are found in an area of the same size anywhere else in South America. Almost all the Colombians live in the basins and valleys of mountainous western Colombia.

Colombia also produces oil, but its chief export is coffee. Colombia is the world's second largest producer of coffee. The coffee farms are chiefly of medium size and are owned by both mestizos and people of European descent. Nearly three fourths of Colombian workers are employed in agriculture. A large number of them grow and transport coffee and other commercial crops. However, the great majority are subsistence farmers who raise corn, wheat, or potatoes.

The two countries. In some ways Venezuela and Colombia are much alike. Yet, as you read this chapter you will find great differences between the two countries. The people of Venezuela are divided between wealthy people who live in modern, complex ways and poor people who have only a bare living. The people of Colombia live in many different groups, separated by natural barriers. One group may be white, another Negro, another Indian, and a fourth of mixed descent. Yet few Colombians are very wealthy and few are very poor. The reasons for this difference between the countries have to do with oil and coffee and trade. Colombia is less wealthy than Venezuela, but its people are much more united. Try to discover why.

The Caribbean Countries on the Map

As you may see on the map, page 56, the Caribbean countries are in the north-west part of South America. The map on this page is on a larger scale than the map of South America. Which one of the Caribbean countries extends into the southern hemisphere? Notice that both these countries lie entirely within the tropics. This means that they have little change in temperature from season to season. They are warm-weather countries except at the high altitudes.

The Andes Mountains. On the map find the mountain ranges that extend into the Caribbean countries. Notice that in Colombia the mountains consist of four ranges running north and south. The Coast Range, extending along the Pacific coast, is the shortest and lowest. The other three are ranges of the great Andes Mountains and are much higher than the Coast Range. They are called the Eastern Range, the Central Range, and the Western Range. The Central Range is the highest. Between the Andean ranges, deep valleys run north and south, opening onto the lowland bordering the Caribbean Sea. Only one valley opens onto both coasts, the Pacific as well as the Caribbean. What rivers run through this valley? You can see at once that the natural routes of travel through this part of Colombia run north and south. The high ranges block travel east and west.

Notice that the Eastern Range continues northward and northeastward and divides into two branches separated by the broad Maracaibo Lowland. In which country does each branch lie?

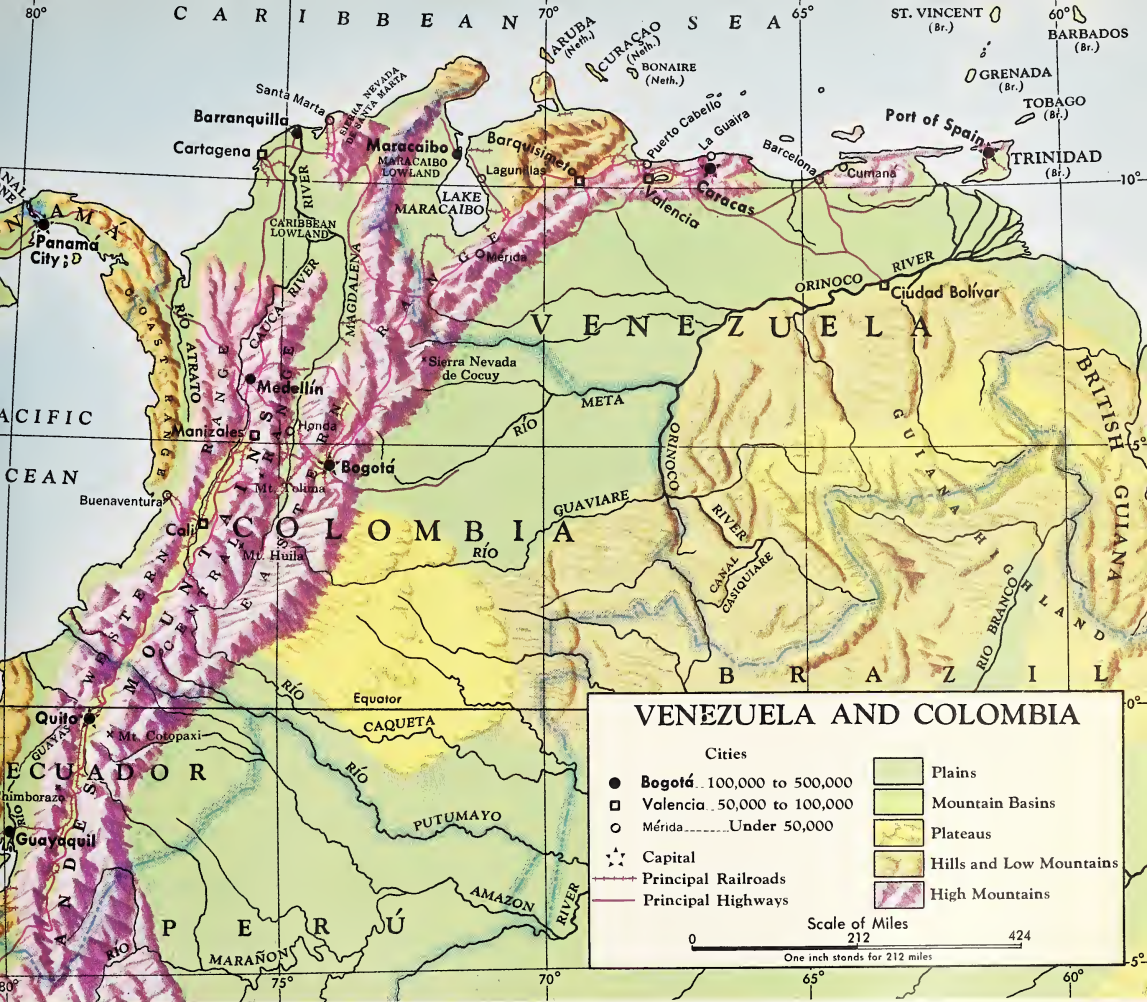
The Andean highland is the heart of both Venezuela and Colombia. It includes the most thickly populated sections, the most productive farms, and the largest cities.

Trade and transportation routes. Next notice on the map that Colombia's Pacific coast line is about as long as its Caribbean coast line. Therefore, you may wonder why we call Colombia a Caribbean country. The reason has to do with trade and transportation routes. The easy routes of travel run from the highlands northward to the Caribbean Lowland, and most of the country's foreign trade is carried on through three great seaports on the Caribbean. Buenaventura is Colombia's only important Pacific port.

The western valley. On the map locate the lowland in Colombia that opens on both coasts. Notice that it lies just east of the Coast Range. This plain is drained by a short river in the south and a long river in the north, the Río Atrato. What, then, can you say about the slope of the land?

The Magdalena Valley. Transportation is a difficult problem in Colombia. The chief route of travel between the highland settlements and the Caribbean seaports is the Magdalena River. You can see on the map the long, narrow valley through which the Magdalena flows. Notice that the valley runs generally northward until it ends at the Caribbean coastal lowlands. Into what body of water does the Magdalena flow?

Even though the Magdalena is Colombia's most important route, it is not a



satisfactory one. Sand bars at the mouth of the river prevent the entrance of large ocean vessels. Often storms in the mountains cause sudden floods in the Magdalena, especially where it is joined by its branches. In November, when the river is at its lowest, the water is not deep enough for river steamers to move upstream easily. There are rapids a little more than six hundred miles up the river from the Caribbean.

The Maracaibo Lowland. On the map look again at the Maracaibo Lowland, in Venezuela between the two

northern branches of the Eastern Range. This plain is surrounded by mountains except in the north, where it extends to the Caribbean. Lake Maracaibo is drained by a broad river flowing into the Caribbean Sea. Why is this small lowland of great importance to Venezuela?

The Orinoco Llanos. *Llanos* is a Spanish word for plains. Extending from the Andes toward the Orinoco is a vast plain. This great natural region covers much of Venezuela and continues into eastern Colombia. As you will learn



PHILIP GENDREAU, N.Y.

Many of the people living on the Orinoco Llanos depend on the Orinoco river boats for their supplies. Notice savanna across the river.

later, the llanos are used chiefly for raising cattle but are not good pasture land. Part of the year they are too wet and the rest of the year, too dry.

The Amazon Lowland. In Colombia a strip of the Guiana Highland separates the llanos from the Amazon Lowland, the largest lowland in South America. On the map of South America, pages 56–57, notice how many countries share this lowland. It is covered with tropical forest and like the llanos has few people.

The Guiana Highland. Find on the map the Guiana Highland, south of the Orinoco River. Although Venezuela includes a large part of this highland, it is also shared by two other countries and three colonies (map, page 56). Because the Guiana Highland receives a little less rain than the Amazon Lowland, it is covered with thick patches of forest mixed with tropical grassland.

Few people live in the Guiana Highland, and little is known about much of this area. Gold and diamonds have been

found in some parts of it. Large deposits of high-grade iron ore just south of Ciudad Bolívar are now being mined. The ore is shipped to the United States.

THE ORINOCO LLANOS

The Orinoco Llanos slope gently from the Andes toward the Orinoco. They include the rainy Orinoco delta with its dense tropical forest, but the larger part of the great plain is savanna. Notice on the population map, page 11, that no areas on the llanos have more than ten people per square mile. In most places there are only one or two per square mile, and some areas have no inhabitants at all. Most of the inhabitants of the thinly settled sections are *llaneros*, or herdsmen of the llanos.

The llaneros. Most of the owners of the cattle live in cities in the Andean Highlands and hire llaneros to care for their herds. The llaneros live on the plains.

Since the llaneros and their families must move with the herds from one area

PHILIP GENDREAU, N.Y.

Crops are not grown to feed the herds of cattle on the llanos. The llanero must drive his cattle from one grazing area to another.



to another, the houses are small, simple huts. Usually they are open on all sides; only the bedroom is inclosed by walls made of mud. Some huts on the llanos have a wall on the side from which the wind generally blows. The roof of the hut is thatched with palm leaves, which keep off the heaviest rain, and the floor is hard-packed earth. It takes only a few days for a llanero to build a hut.

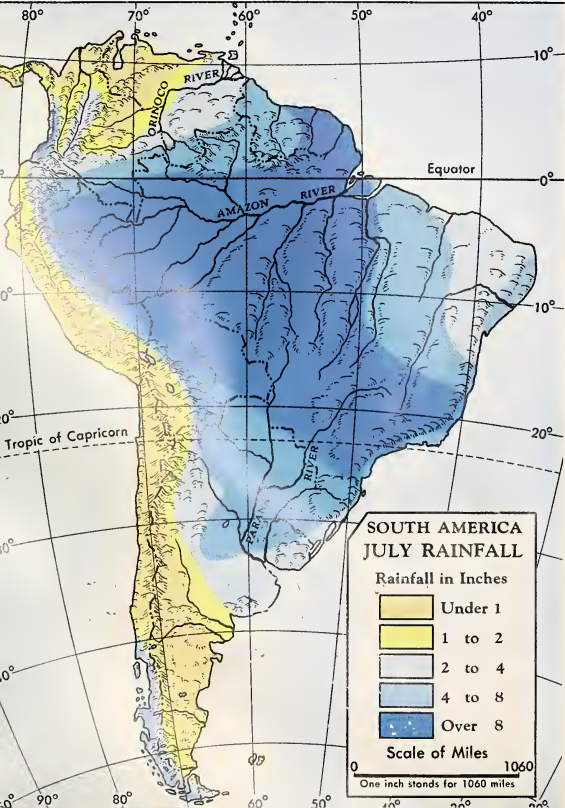
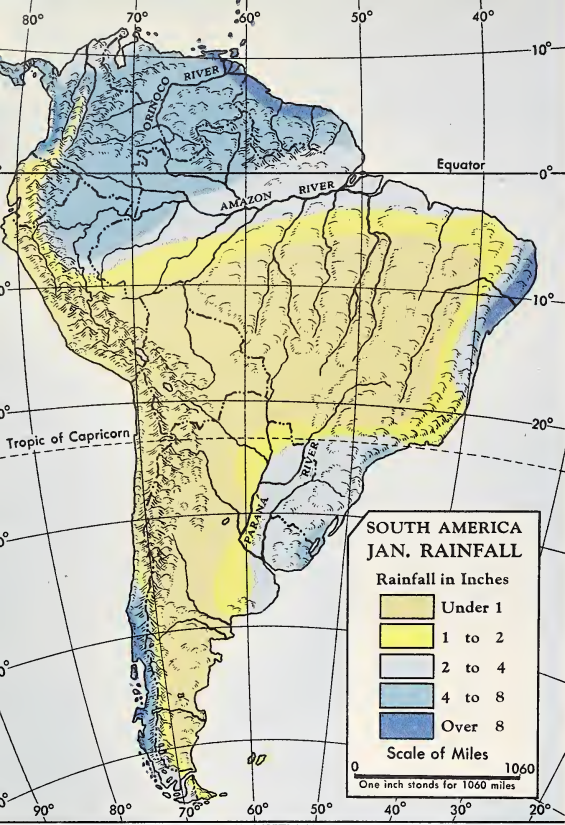
These huts have only the simplest furnishings: hammocks to sleep in, a log or two to sit on, a large box in which to store things, a grinding stone, and a few cooking utensils and bowls. A fireplace is built outside, perhaps under a tree.

In the morning the llanero mounts his horse and rides away to look after the cattle. In the late afternoon he drives a few cows into a pen, singing as he works. Then he lassoes them one at a time to milk them. The milk is used by the llanero and his family.

Sometimes a traveler crossing the llanos on horseback stops at the hut for

the night. He slings his own hammock under the thatched roof and uses it as both a chair and a bed. If food is not scarce, the llanero's wife may roast *plantains*, cook beans, and bake thin cakes of manioc for the traveler. The plantain is not like the weed that grows in our country even though their names are spelled and pronounced alike. It does not even belong to the same plant family but is a tropical plant that has a fruit somewhat like a banana, though not so sweet.

Rainfall. Turn to the map on page 61 and find Venezuela and Colombia. For the most part both these countries receive plenty of rain, although dry areas are found along the coast of Venezuela. In warm weather, water evaporates quickly after a rain. In our country, which has a cool season, twenty inches of rainfall are usually enough to grow crops without irrigation. But tropical lowlands are warm the year round, without any cool season, and there twenty inches of rainfall are not enough for crops.



From the maps on this page you can tell whether more rain comes in winter or summer. On map 1 find the Orinoco Llanos between the Andes and the Guiana Highland. Now find them on map 2. Does the dry season on the llanos come during our summer or our winter?

The dry season. In early March the savanna is dry and brown. Since January there has been no rain. The tall, coarse bunch grass is hard and dry. Scrub trees and low, thin bushes grow in patches with wide spaces between. Their leaves have fallen, leaving the branches bare. Here and there are scattered palms. In some parts of the savanna there are no trees at all. The weather has been so dry that the small streams have dried up. In their stream beds remain a few pools and swamps. Only the larger rivers are still flowing.

The daytime is very hot, although a cooling wind blows from the ocean across the eastern part of the llanos. The air is warmed as it sweeps westward across hundreds of miles of hot soil. On the western llanos the air never loses its heat.

Over these vast plains herds of half-wild cattle wander trying to find enough food and water to keep them alive. During the dry season many of the herds are far to the south in the marshy lands near the Orinoco River. The mosquitoes and flies bother the cattle and spread diseases among them.

The wet season. Just before the end of the dry season, the llanero sets fire to the grass. In April occasional rains begin, with days or even weeks between rains. Since the dry grass has been burned, the cattle easily find the young, green shoots of new grass as it appears.

By June the rains are heavy. The Orinoco River and its branches over-



STANDARD OIL CO. (N.J.) BY VACHON

Cattle in Venezuela on their way to market. In search of good grazing lands the llaneros must keep moving their herds. Then they must be fattened on pastures near the market.

flow their banks, flooding thousands of square miles of the lowland. As the wet season advances and the heavy rains continue, the llaneros slowly drive the cattle to the higher areas which stand as islands above the floods. After the animals have eaten all the grass on one of these islands, they are driven to another. Sometimes they must wade long distances through shallow water to reach the next island. Gradually the herd is driven northwestward until it reaches higher ground.

Return of the dry season. In October it rains less, and water drains off the flood plains. The cattle graze on the fresh green grass that is now growing in the wet lowlands. In November and December there are only occasional showers. Alligators and water snakes gather in the swamps. As the dry season advances, they dig down into the mud to sleep until the next rainy season.

The grass begins to wither. Its stems become hard and are no longer good feed for the cattle. Now the llaneros again move their herds toward the Orinoco River.

Large ranches. Not all of the ranchmen live in this way. On the Orinoco Llanos are a few ranches which the owners themselves run. The houses have several rooms and plenty of furniture. Near the ranch house are fenced lots in which some of the cattle are kept. A few horses graze near the house. Because the ranchman has dug wells to obtain a steady supply of water, he does not have to move from place to place in search of pastures. He may plant some of his land with grass which makes good pasture. Such a ranchman usually has several men to help him do the ranch work.

Cattle markets. When the cattle are ready to be sold, they are often driven northward to the highlands, more than a

hundred miles away. On this long drive the animals lose flesh; they must then be fattened on cultivated pastures before they can be sold. In the highland around the Lake of Valencia many irrigated pastures of alfalfa and cultivated grass are for rent. The use of these pasture lands is expensive, and, even after fattening, the quality of the beef is too poor to bring a good price. Some of the beef is exported from the port of Puerto Cabello (find it on the map on page 69); some is used in Venezuela.

The llanero's way of living. You can see that the llanos is a poor grazing land and that the ranchers cannot obtain much income from their herds. Why, then, do the llaneros go on raising cattle? The llaneros do not think of cattle herding as a business, as ranchers do in the United States. They do not think of herding as successful only if it makes money for them. Herding is their way of living, the only one which they know. If it is not profitable, that makes no difference. They will keep on working as herders because they like the life on the plains.

THE MARACAIBO BASIN

Venezuela is the third largest producer of petroleum in the world. Only the United States and the Soviet Union produce more oil. However, Venezuela exports most of its oil, while the two other countries use most of what they produce. Venezuela has less need of its oil within the country and has become the greatest exporter of oil in the world.

The large oil industry in Venezuela is not a native industry but was developed by foreign oil companies from the United States and England. It is of interest only

to the Venezuelan government and to the small number of Venezuelans who work for the foreign companies. The government collects enough taxes from the oil companies so that it has a fairly steady income. The oil industry has made the Venezuelan government wealthy and powerful.

The oil fields. The Maracaibo Lowland is a very humid region. High temperatures cause much evaporation from Lake Maracaibo, and because the lowland is sheltered from the wind, the moisture is not carried away. The moisture in the air is called the *humidity*. The humidity and lack of wind on the Maracaibo Lowland make it an uncomfortable place in which to live.

On the eastern shore of Lake Maracaibo near the village of Lagunillas is the largest oil field in Latin America. If you were to go there at night, you would see electric lights shining from hundreds of oil derricks around the shore of the lake and even out in the lake itself. Under each derrick is an oil well that goes deep down into the earth, sometimes a mile or more. The wells out in the lake had to be drilled under many feet of water.

Materials and supplies are brought every day to the Lagunillas oil field by trucks and boats. Every day thousands of barrels of oil are produced in the field and stored in large tanks until it is transported.

Set back away from the field are attractive houses where the engineers and managers live. Around some of these modern houses are tall coconut palms. There are also clubs, hospitals, schools, fire departments, and sport fields for the workers in the oil field.

Foreign oil companies. Like the banana industry in Central America, the



PHILIP GENDREAU FROM N.Y. AND JAMES SAWDERS FROM COMBINE

Oil at Lake Maracaibo. Because oil is so valuable, large companies have spent millions of dollars clearing forests, building roads, and drilling wells on both land and water.

oil industry in the Maracaibo region has been developed by foreign oil companies. The Venezuelan government has sold them the right to drill wells in different areas along the shore of the lake or in the lake. The work is usually directed by foreign engineers, and imported machinery is used.

When wells are to be drilled in a new field, the company first clears away the dense forest and builds roads. The swamps are drained and sprayed to kill mosquitoes and other harmful insects. Then the company puts up the buildings in which it will carry on its business. It builds enormous warehouses, machine shops, woodworking shops, storehouses where food supplies are kept, and offices.

Transporting, refining, and exporting oil. Big ocean tankers carry the oil or its products to foreign countries, but the tankers do not come to Lagunillas or the other fields around the lake. The river joining Lake Maracaibo with the Caribbean Sea is not deep enough for ocean vessels to pass through. Much of the oil is sent by pipe line or in small

vessels to refineries that can be reached by ocean-going ships. Most of it goes to large refineries in the Dutch islands of Aruba and Curaçao, just off the Caribbean coast of Venezuela. Find these islands on the map, page 69. There are no oil wells on these small islands, but almost everyone living there works with oil in one way or another. The refineries make gasoline, fuel oil, and other oil products that are needed to keep engines and machines running.

City of Maracaibo. Because of the oil industry, the small town of Maracaibo, once without either pavements or sewers, has become the second largest city in Venezuela. It is a modern city with paved streets, tall office buildings, and large, comfortable dwellings. Almost a third of its people are foreigners.

Even though ocean-going ships cannot reach the city, Maracaibo has become the leading port of Venezuela. Through this port not only petroleum but also coffee and sugar are exported to world markets. Foods and manufactured goods are imported.

THE ANDES OF VENEZUELA

Most of the people of Venezuela live in the Andes Mountains. The Andes in Venezuela are highest just south of Lake Maracaibo. Toward the east they are lower. On the map on page 69 locate the capital city of Venezuela, Caracas. Near Caracas the Andes rise directly from the Caribbean coast to a height of nine thousand feet. Here the coast and lower slopes receive little rain. But higher in the mountains the rainfall is heavy and dense forests grow. Rain is especially heavy in valleys that slope toward the east, because here the air coming from the east is forced to rise and cool and drop its moisture. These valleys are good for raising cacao.

Commercial farms and pastures. The mountain basin of Valencia, besides being the center of the Venezuelan cattle business, is also the chief farming region of the country. Locate this basin in which the city of Valencia lies (map, page 69). Sugar cane is the chief crop of the basin, but cotton is also raised to supply textile factories in the cities of Valencia and Caracas. As these cities have grown larger and larger, more food crops—corn, rice, and beans—have been planted to feed the growing population.

Coffee and cacao. Outside the basin of Valencia coffee and cacao are the leading commercial crops of the highlands. These are raised on the estates of large landowners.

Coffee is Venezuela's most important export next to petroleum. It is of a very good quality and brings high prices in world markets. Coffee trees can be grown on slopes too steep for other crops. The trees are planted here and there on slopes up to about 6,500 feet

above sea level. The better-flavored coffee comes from trees planted at the high altitudes.

The cacao plantations are located on the lower slopes and the bottoms of the valleys that face eastward. You should be able to tell why this is so. Cacao also grows along the wetter slopes overlooking the Caribbean Sea.

Subsistence farms. In Venezuela are many small subsistence farms on land too high or too steep for commercial farming. High in the mountains above the coffee plantations are small grain farms. Still higher, in the cold regions above the altitude where grain will grow, potatoes are raised.

Corn occupies the largest area on the subsistence farms. The farmers grow corn on the steep slopes, which they cultivate with a hoe. Often they grow beans and manioc, too. But the yield is very low on these poor lands cultivated by primitive methods. Every year Venezuela must import much food for its people.

Caracas. On the map (page 69) again look at Caracas, the capital of Venezuela, lying in a high, fertile valley not far from the Caribbean coast. Both Caracas and the city of Valencia are located where low passes cross the mountains. Caracas is about three thousand feet above sea level. Yet the slopes separating it from the sea are so steep that the road winds back and forth along the hillsides as it climbs over the pass and down to the city. A railroad, too, follows over the pass to Caracas. Find this railroad on this map.

Railroads in the Andes Mountains are expensive to build. One from Caracas to Valencia has 217 bridges and 86 tunnels. Because of the expense of building and

CARACAS - VALENCIA AREA

— Railroads

— Principal Highways

Scale of Miles

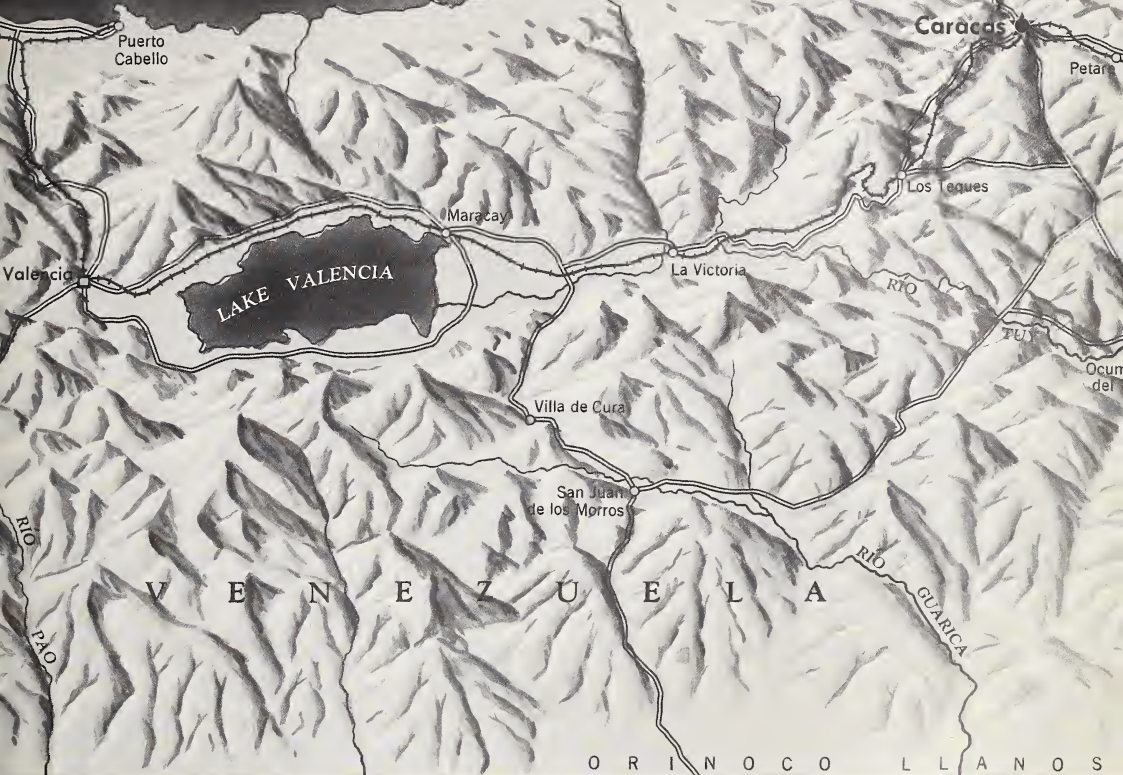
13

26

One inch stands for 13 miles

C A R I B B E A N S E A

North



upkeep, the railroads must charge a great deal for carrying freight. The cost has been so high that most trade goods in Venezuela go to and from the coast by highway and some still go over rough trails on the backs of mules.

Caracas is one of the oldest cities in the western hemisphere. The city is famous as the birthplace of Simón Bolívar, a great South American hero. He led most of the Spanish colonies of South America in their wars for independence. Afterwards, he tried to work out ways to keep the countries of South America free and at peace with one another.

Although Caracas is old, it is a very modern city. Like any other large city, it has streetcar lines, electric power, a good water supply, telephone service, schools, and a university. In the suburbs are fine homes, owned by wealthy families who have traveled and lived abroad and brought back foreign ideas. These people and foreign companies have built new and modern hotels for businessmen and tourists, who are coming to Caracas in increasing numbers. But Caracas also has a great many small, plain houses that are not at all modern. These are chiefly owned or rented by poor people.

Highways. The city is connected by railroad with La Guaira, its port city on the Caribbean coast. A modern concrete road goes from La Guaira to Caracas, then to Valencia, and back to the Caribbean again at Puerto Cabello, which is the best harbor along the Venezuelan coast. Buses carry passengers from Caracas to other cities in the highlands.

From Valencia a bumpy gravel road leads southwestward by way of the city of Mérida to the Colombian border and then continues all the way to Bogotá, capital city of Colombia. You can travel by motor bus from Caracas to Bogotá.

The good paved roads are used chiefly by tourists and for the transportation of meat and dairy products to market in Caracas. Most Venezuelans have no automobiles. Their mules and donkeys follow the trails, and they regard the highway as only a place of danger. Yet because of its good roads Venezuela stands high among the countries of Latin America in its use of automobiles, buses, and trucks.

Valencia. Although not so large or important as Caracas, Valencia is in the midst of a good farming region and is a center of the cattle business. In Valencia are cotton factories, tanneries, dairy plants, and meat-packing plants. Their products are all sold in the markets of Venezuela.

THE CARIBBEAN COASTAL LOWLANDS OF COLOMBIA

West of the Maracaibo Basin is the western branch of the great Eastern Range of the Andes. This branch lies mostly in Colombia. Beyond it in the north is the lofty Sierra Nevada de Santa Marta (find it on the map on page 69). Though

these mountains cover only a small area, they rise very steeply to a height of over 18,000 feet. South and west of the Santa Marta is a swampy coastal lowland covered with grass and scattered patches of forest.

On this lowland are three of the four leading seaports of Colombia. From the Andes Mountains to the south most of the country's exports, especially coffee, reach the coast by way of the Magdalena River. Also most of Colombia's imports, consisting chiefly of manufactured goods, enter the country through these seaports. Since Colombia supplies most of its own food, its food imports are much less than those of Venezuela. On the map, notice that each of these seaports—Barranquilla, Santa Marta, and Cartagena—is in a good location for trade.

Barranquilla. Of the three Caribbean seaports Barranquilla, ten miles up the Magdalena from the coast, is the largest. Recently the mouth of the Magdalena was deepened to allow small ocean ships to go up the river to Barranquilla. Today this city controls the trade of the Magdalena Valley.

Santa Marta. On the eastern side of the Caribbean coastal lowlands is the Santa Marta district centering on the port of Santa Marta. This port city has a good harbor, but since ocean vessels have been entering the Magdalena, Santa Marta has been at a disadvantage because it cannot be reached by river boats. From the Magdalena, Santa Marta can be reached only by launches and canoes through the swamps and shallow lakes west of the river.

Cartagena. At one time Cartagena, the farthest west of the three ports, was the leading seaport of Colombia. Just south of this port is a branch of the



Magdalena, and in colonial days the port could be reached by the boats and canoes then used. Later this channel filled with silt until it was no longer navigable. Cartagena then lost its importance.

Today, however, shipping from Cartagena is increasing because of a railroad that now connects it with the town of Calamar on the Magdalena. Trade also comes by launch, canoe, and airplane from the valley of the Río Atrato to the southwest. A port, you know, must have

good connections with the markets and the productive centers of the country if it is to grow large.

A pipe line more than four hundred miles long brings oil to ocean tankers in Cartagena harbor for export. Colombia has two oil fields from which millions of barrels of oil are obtained each year. The more important field is on the eastern side of the Magdalena Valley. In South America Colombia is second to Venezuela in production of petroleum.



STANDARD OIL CO. (N.J.) BY COLLIER

Coffee berries are poured into a machine which removes the pulp from the beans.

Farming. Most of the farmers on these lowlands are Negroes. Sugar cane and cotton are the main crops raised on large plantations, middle-sized farms, and small farms. There are also some cattle ranches. Once there were large plantations of bananas, but they were wiped out by a disease that attacked the plants. In addition to sugar and cotton subsistence crops are grown on the small farms, and sometimes a few vegetables and fruits for market.

THE PACIFIC COASTAL LOWLANDS

In the Pacific coast region the weather is always hot, humid, and rainy. This region is one of the very rainy parts of South America. Most of the people are farmers. The larger part of the population of Buenaventura, Colombia's second

leading seaport, is Negro. The thinly populated forests both north and south of Buenaventura are inhabited chiefly by Negroes and Indians. They raise food crops in small clearings in the forests and move from place to place as the soil becomes less fertile. Sometimes they work in the mines where gold or platinum is obtained.

In the stream gravels at the headwaters of the Río Atrato, platinum has been mined for more than thirty years. This metal is valuable not only for jewelry but also for articles used in chemical industries. For many years Colombia has been among the two or three leading producers of platinum in the world.

THE ANDES IN COLOMBIA

The Andes in Colombia, as in Venezuela, include the most densely populated areas of the country. The people in the highlands make their living chiefly by farming. As we have seen, the most important highland crop is coffee. The coffee crop usually brings in more than three fifths of all the money which Colombia receives from its exports. And yet, coffee is grown on only a small part of the country's farm land.

The hot low valleys between the mountains are covered with dense forests. Between 3,000 and 6,500 feet above sea level is a region of mild climate where coffee and tobacco are raised. From 6,500 feet to a little over 10,000 feet is a colder region where grains are raised. Above this point are mountain grasslands which continue to the snow line at about 15,000 feet. These grasslands are windy and cold, but they have been used for grazing cattle and sheep for many centuries.

Slight temperature changes. Near the equator the temperatures change little from season to season. Even in the lowlands, where temperature changes are the greatest, the difference between the average temperature of the warmest month and the coldest month is only a few degrees. Because Colombia is so near the equator, there are no marked temperature changes such as we have in the United States. This means that where crops receive enough rainfall they can be grown all year round.

Location of coffee farms. The map on page 79 shows you that coffee farms are scattered all through the highlands of Colombia. Coffee grows best with a long, wet season and a short, dry season. The Colombian highlands have two rainy seasons, one from April through June, and the other from September through November. The harvest comes at the end of each dry season.

Transportation of coffee. Most of the coffee plantations are on steep hill-sides a long way from rivers and good highways. Thus several kinds of transportation are usually necessary to get the coffee to a seaport. It is shipped in large bags. Along the upper Magdalena it

can be shipped by railroad part of the way. In some areas far upstream and distant from the river the bags of coffee must first be carried on the backs of mules over narrow mountain trails. Sometimes the bags are carried in oxcarts. Sometimes they must be taken from one road or railway to another. Before they reach a seaport they are loaded and unloaded many times. This adds to the price of coffee when it is sold.

Coffee is brought by pack mule to the upper Magdalena River and then shipped by railroad downstream to Honda. There the bags are reloaded on a steamer that travels on the lower Magdalena. During the wet season, when the river is high, the coffee may move fast. In the dry season a load of coffee may be five or six months on the way from the farm to a seaport.

Most Colombian coffee is exported from the Caribbean ports about which you have read. Here it is loaded on ocean vessels going to the United States. Because of its mild flavor, it brings a higher price than coffee from Brazil, another important coffee country.

High mountain farms. Above the coffee plantations, one finds both small

JAMES SAWDERS—COMBINE

A mule train carries bags of coffee from the plantations in the Andes to small ports on the Magdalena River.



subsistence farms and large estates on which crops are raised by tenants. Farm animals are raised, too, on these mountain farms. The high pastures are much better than the llanos because the grass makes good feed and there are no insect pests.

Bogotá, capital city of Colombia. Both of the Caribbean countries have their capital cities in the highlands, but the capital of Colombia is a larger and more important city than Caracas. Colombia has more than twice as many people as Venezuela.

In a basin 8,650 feet above sea level in the eastern range of the Andes is Bogotá, Colombia's capital. Although difficult to reach by rail, it is the largest city in the country. Around Bogotá the majority of the people are mestizo and Indian, but the inhabitants of the city are mostly of European descent.

Bogotá is not located where lines of transportation naturally come together. It has been very hard to build roads and railroads over the steep, rugged mountains to the sea and other distant places. Today road and rail connections from Bogotá go in three directions. One road, which you have read about, goes north to join the Venezuelan highway from Caracas. Another road crosses the ridge east of Bogotá, passes some Indian communities on the eastern slopes, and descends to the edge of the eastern plains. Here, you remember, are few inhabitants. Four other roads descend from the Bogotá Basin and go west to the Magdalena. On all these highways regular service is provided by trucks and passenger buses. Air lines also connect Bogotá with many important Latin American cities.

Besides being the governing city, Bo-

gotá is the educational, art, and music center of the country. The city also has factories for refining sugar, making cement, and manufacturing tobacco, cigars, and men's clothing. But Bogotá is second to Medellín as the manufacturing center of the country.

The Medellín district. On the map on page 69 locate Medellín, the second largest city in Colombia. It is located on the western side of the Central Range of the Andes, at an elevation of about 4,000 feet.

This part of Colombia is very different from the other parts of the country. The population of the Medellín district is entirely white, for in the early days of settlement there were few Indians here. Also, the settlers did not bring in Negro slaves, as did many other settlers. In the valley are subsistence farms and many small coffee farms on which the white farmers do all their own work. Because they work hard and use their land well, they are strong and contented and prosperous, and they have made their valley very productive.

Medellín has many textile factories using cotton grown on the coastal lowlands. Though Bogotá and Barranquilla, as well as Medellín, produce factory goods, Colombia is not an industrial country.

TRADE AND WAYS OF LIVING

About Venezuela. The oil industry has brought to Venezuela people who live in much more complex ways than do most of the Venezuelans. Large sections of the cities of Caracas and Maracaibo, together with the well-paved roads leading to and from these cities, are not Venezuelan at all. They have been built by foreigners or are used chiefly



EWING GALLOWAY

A village in the highlands of Bolivia. Along with electricity and automobiles, one can still see many signs of primitive life such as this oxcart used by the street sweeper.

by foreigners. The foreigners and the wealthy Venezuelans who have traveled and lived in foreign lands are accustomed to modern, complex ways of living. Their life is very different from that of the poor people in the cities and on the farms of the country. Thus, the foreign oil companies have kept the Venezuelans divided into two separate groups, one wealthy and one very poor.

About Colombia. Colombia also has many different kinds of people, who live on many different kinds of land reaching from lowland near sea level almost up to the snow line. In race and use of the land there are more differences between the groups of people in Colombia than in Venezuela.

Colombia is not so wealthy a country as Venezuela and has fewer wealthy

people. But it also has fewer very poor people. Because there are not such great differences in wealth and ways of living among Colombians, they get along with one another and are united as a nation. Coffee is the chief product that is exported to world markets. Coffee and trade in coffee bring many Colombians income to provide them with a good living. In addition to the coffee trade, Colombia has a large domestic trade in other products. Up the Magdalena go cattle, sugar, and cotton from the Caribbean coastal lowlands. Down the river go grain and potatoes to feed the people of the lowlands. Sugar and cacao go to the candy factories of Medellín and Bogotá. This domestic trade provides income for many people in Colombia.

Thinking And Doing

On a large cardboard draw a picture of the side of a mountain as it would appear to a person about ten miles away. Draw lines to show the following elevations: sea level, 500 feet above sea level, 1,500 feet, 3,000 feet, 6,000 feet, and 12,000 feet. Color the areas between the lines in different colors, starting with green at sea level and ending with red above 12,000 feet. Now show at which elevations crops of Colombia and Venezuela are grown, by pasting labels or pictures of your crops on the side of the mountain.

The class may all work together to make a mountain of papier-mâché and to show elevations and crops on it.

MAKING AND USING MAPS

1. On an outline map of South America draw the boundaries of Colombia and Venezuela. Shade lightly the mountainous parts of the country. Then locate the following on your map.

Caracas	Barranquilla
Bogotá	Puerto Cabello
Maracaibo	Medellín
Buenaventura	Valencia
Orinoco River	Magdalena River
Lake Maracaibo	

2. On a map of Colombia and Venezuela show where most of the people live. Tell the advantages and the disadvantages of living in those areas.

3. Describe a trip from Panamá City to Caracas by land. You can go by highway, railroad, and mule-back, but from place to place you should say which form of transportation you are using. Describe the land you are going over,

the vegetation, the rivers you cross, what people are doing along your route. Use the map on page 69 to guide you. (The dotted red line from Panamá into Colombia shows a plan for a highway that has not been built.)

4. On the map on page 69 point to and name:

- a hot region
- a cold region
- a lowland
- a highland
- a densely inhabited region
- an uninhabited region
- a region in which mostly Negroes live
- a region in which mostly mestizos live
- a region in which mostly whites live
- a region of small farms
- a region of much trade
- the location of an industry run by foreigners
- the location of an industry run by natives
- a region where cacao is raised
- a region where coffee is raised
- a region where wheat is raised
- a region where cattle are fattened for market

5. Which of the two countries has the longer river? Which of the two largest rivers is most used for trade?

6. Draw a sketch map of Colombia showing the Magdalena River; the equator; the cities of Bogotá, Medellín, Cartagena, Barranquilla, and Santa Marta; the Andean ranges. Using a dotted line, show the route by which coffee is transported from an upstream plantation east of Cali to a seaport.

7. Using the maps on page 72, tell

what you know of the rainy and dry seasons in the llanos. Find a coastal area in Colombia that has heavy rainfall the year round. Find a long coastal strip that is very dry the year round. Turn to the map on page 61 and see if you are right. What kind of vegetation would you expect to find in each of these strips? How do the people in the humid part of Colombia get their living?

THINGS TO THINK ABOUT, TALK ABOUT, AND DO

1. In Latin America there are large cities, such as Mexico City and Medellín, where the people think and live much as we do. But there are other people in Latin America who show little desire to gather money and many luxuries. It is not necessary for them to get rich in order to be successful. Success may mean to own great tracts of land or to keep up the customs of their forefathers. Name some places in Colombia and Venezuela where the people live in ways different from ours. Describe their ways of living, making clear the things for which they work.

2. The Mississippi River sometimes floods the land on both sides of its banks just as the Orinoco does every year. In Venezuela these floods are helpful, but in the United States many thousands of people may lose their homes and everything they own. Try to explain this difference by pointing out the difference between expected and unexpected floods; the number of houses in each region and their nearness to the river; and the amount of property that can be damaged along each river.

3. Make a pencil sketch to show some important work going on in each of the following places; write a sentence below

each sketch describing the work shown.

Maracaibo Basin Colombian Andes
Orinoco Llanos Caribbean Lowlands

4. What is the chief export of Venezuela? Does this export tell what work most of the people there are doing? Explain the reason for your answer.

5. Compare the ways of living on Lake Maracaibo at the time of the Spanish conquest with the ways of living there today.

6. Explain why parts of Colombia are especially suited to the production of coffee. (If you need to review the kind of climate suitable for coffee, turn to page 42.)

GIVING REASONS

1. Why must the llaneros of Venezuela move their cattle to different parts of the llanos at different seasons?

2. Why do the llaneros drive their cattle to pasture lands near the Caribbean Sea?

3. Why do the llaneros go on herding cattle for a living when this is not a profitable occupation on the llanos?

4. Why does Venezuela export its petroleum?

5. Why is the oil industry important to the government of Venezuela?

6. Why are only a few Venezuelans interested in the oil industry?

7. Why are many people interested in coffee in Colombia?

8. Why have Caracas, Valencia, and Maracaibo become large and important cities?

9. Look at the map on page 69 and tell why the Panamá Canal is important to the port of Buenaventura.

10. Why is Colombia able to sell so much coffee in foreign markets?



PHILIP GENDREAU, N. Y.

Farming high in the Andes in Ecuador. Some haciendas are so large that they cover an entire valley. How can you tell that the hacienda owner uses modern farming methods?

Ecuador, Perú, and Bolívia: The Andean Countries

To the south of Colombia are three Andean countries, Ecuador, Perú, and Bolivia. All three lie partly in the high Andes and partly on the bordering plains. Ecuador extends from the Pacific eastward beyond the Andes, but not far enough to reach the navigable branches of the Amazon River. Bolivia does not touch the Pacific but extends far onto the plains east of the Andes; it is one of the two inland countries of South America. Perú extends across the crest of the Andes, with important settlements east as

well as west of the mountains. In all three countries at least two thirds of the people are Indians or mestizos. They are descendants of the native Indians who built the great Inca Empire in this region before the coming of the white men.

Mines and commercial plantations. In these three countries, especially in the Andes of Perú and Bolivia, are valuable and productive mines, owned chiefly by foreigners. On the coastal lowlands of Perú are large commercial plan-

tations, on which modern methods of farming are used to make high profits for the owners. Some of these are owned by foreigners and others by wealthy natives—white or mestizo.

The haciendas. In other parts of the Andean Countries most of the land is divided into vast haciendas, owned by a very few wealthy people. The work is done by poor Indian tenants. The landowners usually live in the cities and spend much of their time traveling in foreign countries, leaving managers to run their haciendas. Their children are educated abroad, and much of the income from the estate is spent for amusement and many luxuries. Because the landowners have so much land, their income is high, even though the yield per acre is very low. Therefore they do not have to improve their land.

Subsistence farms. The vast majority of the people in the Andean countries live very differently. They are poor Indians, who carry on primitive subsistence farming on poor land in the highlands or as tenants on the haciendas. Most of these people know nothing about the modern, complex ways of living of the city people. They have nothing to do with foreign trade.

Little change. The plantation owners of Perú and the mine owners are interested in developing their own land to bring them income. But most of the landowners of the three countries are satisfied to live in the same way that they have always lived. Because they do not make improvements, their Indian tenants remain very poor. The Indians are not interested in owning any land at all. They know only one way of life, that of their ancestors. To them it is a good way of life and they make no at-

tempt to change. Today the ways of living of most of the people in these three countries are almost the same as they were centuries ago.

THE EMPIRE OF THE INCAS

The llama herders. About eight hundred and fifty years ago a small tribe of Indians lived in the cold, high mountains of Perú just southwest of Cusco (map, page 95). These Indians were herders and had two kinds of animals, the *llama* and the *alpaca*, which are not found in other parts of the world. Both are members of the camel family. The llama is smaller than a camel and has smaller feet and a shorter tail, but its ears are longer. It does not have a hump as the camel does. The Indians kept the llama to carry burdens for them over the steep mountains. They ate its flesh and made its hide into leather. The alpaca is a relative of the llama but is not so large and strong. The Indians raised the alpaca for its wool, which is fine and long. From the wool they wove many kinds of cloth.

The high mountain region where the llama herders lived was not good for farming because of its cold climate.

In the highlands of Bolivia an Indian driver and his llamas stop for a drink of water.

SEVERIN FROM THREE LIONS





The tribe wanted to move down into the warm and fertile mountain basin of Cusco. This basin, too small to be shown on the map on page 95, is level or gently sloping and is watered by a river. At that time it was occupied by a tribe of Indians who would fight any people rather than give up their land to another tribe.

Many stories are told of what happened, and we do not know which story is true. We do know, however, that the llama herders conquered the tribe in the

Cusco Basin and became the ruling group. The conquerors later overcame many other Indian tribes in the Andes and built up a great Indian empire. The chief ruler was called the Inca, and the empire he ruled over is called the Inca Empire. Although his subjects included many different tribes of Indians, all of them are often called Inca Indians.

Spread of Inca rule. In the mountain basins around Cusco were farming settlements separated by pasture lands with few inhabitants. Southeast of the Cusco Basin is the basin of Lake Titicaca, over 12,000 feet above sea level and higher than any other large lake in the world. In this basin was the largest of the Andean farming settlements. The weather is cool, and the rainfall, although light, is sufficient to raise grain without irrigating the land. The tribes living in this thickly settled farming region were soon conquered by the Inca Indians.

The Inca Indians continued to spread their rule from one Indian tribe to another, sometimes by clever deceit and at other times by force. Always they tried to get control of good farm land.

The tribes on the Peruvian coast were also conquered. These communities depended on water from the highlands to irrigate their fields. So it was not hard for the Inca Indians, who controlled the streams in the highlands, to overcome the coastal tribes.

Extent of the empire. The Inca Indians continued to extend their empire until it covered a large territory. Just before the arrival of the white men it reached as far south as middle Chile, southeast to the plains of Argentina, and north almost to southern Colombia. On the west it extended to the Pacific; on the east to the beginning of the dense

tropical forest on the eastern foothills of the Andes. It included mountains that were almost impossible to cross, deep canyons cut by swift streams, high peaks where the air was thin and cold, and deserts where plants withered and died under the glare of the sun.

The largest settlements were in the mountains, among the high ranges of the Andes. Smaller settlements were made in the long coastal desert west of the mountains; they were located on scattered oases made by westward-flowing streams. The Inca Indians did not succeed in making permanent settlements on the heavily forested eastern slopes of the Andes or on the plains beyond. The vast tropical rain forest stretching from the Andes eastward is still almost uninhabited.

The Inca. The town of Cusco was the capital of the empire and the home of the Inca who ruled over all the villages. He controlled all the land and had power over the lives of all his subjects.

A farming people. The people of the empire were farmers and herders. Around every village were its fields. Some were on the level bottoms of valleys and basins, and others were on the hill-sides, but all the land was owned by the Inca. The Indian farmers had no thought of owning the fields they tilled.

On steep hillsides the Indians built terraces with stone walls between them, making the mountain slopes look like great, wide staircases. On the level terraces they planted their crops. They built irrigation ditches to bring water from the streams and springs to their fields. Each tribe marked off its fields with hedges of cactuses or bushes.

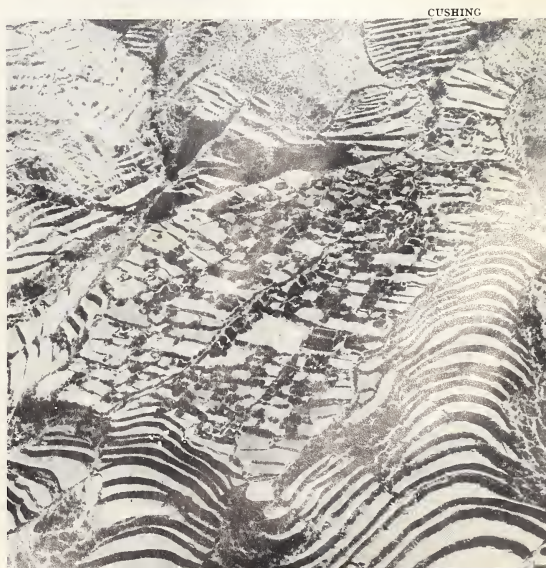
Corn was the chief crop raised by the Indians. But at the higher altitudes they

also grew potatoes and a small grain called *quinoa*. The Indians made soup of quinoa and peppers. Corn and potatoes were grown in the New World long before Columbus discovered America.

The Indians made a potato meal called *chuño*, which is still one of the chief foods of the Andean tribes. The potatoes are frozen and thawed several times. Then they are pressed to squeeze out the water, and finally they are dried. The dark, dry potato meal will keep for years. Besides quinoa and *chuño* the common people ate dried llama meat. Only the Inca and his family ate the meat fresh. The people drank a liquor made from corn.

The products of each community were divided into three parts. One part was given to the priests. Another part was set aside for the Inca and his family. The third part was left for the use of the community. Since the Inca's share was usually much more than he needed, a surplus would be built up and stored in warehouses. This extra food supply was kept on hand to be used when crops failed.

Air view of a deserted Inca village. Old terraces are now used for both corn and wheat.



Roads. The Inca Indians traveled on foot. They had no wheeled vehicles, nor did they ride on animals, but they knew the value of having good roads to connect Cusco with distant parts of the empire. Their roads were narrow but paved with stone; each tribe kept up the roads in its own area. One road led to the north, one to the northwest, one to the southeast, and one to the south. In places they were cut out of solid rock, and where necessary, steps were built. When a road came to a swift stream or a deep canyon, the Indians built a narrow *suspension bridge*. Such a bridge is always firmly fastened at the ends but has no support in the middle. The Indians built theirs of thick ropes made from fibers of a tropical plant. These ropes were stretched across the stream or canyon. The rope ends were passed through holes cut in posts of stone on both banks and then fastened to logs sunk in the ground. The narrow bridge had a plank floor and railings.

Over the highways sped the Inca's runners—swift, hardy athletes who had been trained from boyhood for their work. Each runner went at top speed from his station to the next. He might carry a watertight basket in which ocean fish were kept in salt water until they reached the Inca's kitchen. Or he might carry a message in the form of knotted strings. Sometimes the Indians moved armies over their roads and bridges. The Inca himself was carried along the roads on a splendid curtained platform which rested on the shoulders of trained bearers. By means of these good roads, the Inca kept his empire together, even though it was large and extended over some of the most rugged mountains in the world.

The wise men. The priests of the

Incas were also the wise men. They knew how to determine the hour of the day and the season of the year. A sundial, perhaps carved from a large boulder, was carefully placed in every temple. Also, groups of towers were located so that their shadows told the learned men when the two *equinoxes*, or the times in spring and fall when the days and nights are equal in length, arrived. They knew about the *solstice*, or the times in winter or summer when day and night are most different in length. The priests chose the days for the many festivals.

Farming among the Incas. The Inca priests also proclaimed when the plowing should be begun each year. Then the Inca himself opened the plowing season by using a golden plow on certain plots of ground, called the Fields of the Sun, above Cusco. All other farmers used plows made of heavy wood. They pulled the plows themselves. They had simple tools for weeding and tending the growing crops, and they usually fertilized the soil with fish heads.

Skills of the Incas. The Inca Indians obtained gold, silver, and other metals from mines in the mountains. They worked with metals and made bronze from copper and tin. They wove cloth from cotton and from alpaca wool. Of all the methods of weaving cloth which are used in the world today, every single one was known to the Indians of Perú. They also made colorful pottery in different shapes. They built stone walls without cement, fitting the stones together so carefully that many of the walls they built are still standing today. They also erected beautiful buildings with curved walls and tapering doorways. Today visitors go to see the Temple of the Sun built by the Inca Indians in



When the Inca traveled through his empire, his chair was carried by his servants. Great skill and work were required to build the terraces, good roads, and suspension bridges.

Cusco. These Indians also knew geography and used maps made in colored clay. On these they showed the mountains, high peaks, valleys, canyons, and level lands in every part of their empire.

The common people. The rulers watched over their subjects and told them what to do. The common people did not have to think or act for themselves but simply obeyed their rulers. Day after day they did the same kinds of work. They were given certain fields to farm, and they valued the land only for what their own work could produce from it. They knew nothing about owning property nor did they think of using the resources of the land to get rich.

THE SPANISH CONQUEST

Pizarro and his men. Not many years after Columbus discovered America, Francisco Pizarro, a Spaniard, led a small band of Spanish adventurers into the land of the Inca. These Spaniards conquered the Indians and put their ruler to death.

Cusco, the Inca capital, was too far inland for the Spaniards, who had come from across the sea by ship. They were used to visiting other lands. They were interested in trade and wished to be close to the coast.

The founding of Lima. Pizarro built a new capital on the coastal lowland not



JAMES SAWDERS—COMBINE

A new highway being built from Quito to the Pacific Ocean. Part of it will follow an ancient Inca road.

far from the mouth of a river. Here the climate was mild because of the cool breezes that blow from the Pacific. At first Pizarro called the capital "the City of the Kings." Soon afterward, however, the name of the city was changed to Lima, the name by which it is known today.

Roads to the sea. The long roads built by the Inca Indians all ran in the same general direction as the Andes Mountains. The Spaniards did not keep these roads in repair. Instead they built short roads leading from different parts of the highlands to the nearest seaports.

Desire for wealth and property. Pizarro and his men had come from Spain where nobles owned vast estates on which peasants worked. Pizarro had been a swineherd on one of these large estates. Now he and his men wanted to own estates in the land they had conquered.

The King of Spain, who ruled the empire taken from the Incas, began to grant estates to Spaniards who wished to farm the land for profit. Haciendas covering thousands of square miles were given to

them, together with all the Indian villages on the land. The Indians became the owner's farm hands. On very large haciendas some of the Indian villages were too distant from the casa grande for the Indians to be of help to the owner. In these distant villages the Indians continued to live on the land as before, but had to pay rent to the owner.

There were now two kinds of farms in Perú. One was the large hacienda which belonged to a single owner. The other was the subsistence farm used by a community of Indians who raised crops for themselves and their families.

The Spaniards brought to Perú the idea that land might be owned by a person and crops might be grown on the land to make money for the owner. But the land was of value only when there were Indians to do the work.

When the land was given or sold to a new owner, the Indians were transferred with the land. Since all their lives the Indians had been taught to obey a ruler, they were obedient and did the work they were told to do.

Use of mountain pastures. The Spaniards brought cattle, horses, sheep, pigs, and poultry to the Andean countries. This was the first time that any of these animals had lived in any part of America. Before the coming of the Spaniards the Indians had made little use of land that was too high and cold to grow potatoes. Now Spanish cattle grazed on the high pastures above the tree line. Thus by introducing new farm animals the Spaniards made productive some land that had not been useful before.

Smaller Indian population. The white foreigners wanted gold and silver. They took many of the Indians away from their farms to work in the mines. The mines were very high in the mountains, where the air is extremely thin. A person must breathe faster here than at sea level in order to get the same amount of air in his lungs. At such high altitudes it is hard for lowlanders to breathe and especially hard to do heavy work. Many of the Indians who were taken to the mines from the lowlands did not live to return to their homes.

The Spaniards did not take care of the

irrigation systems which the Inca Indians had built. On many farms there were no longer enough laborers to do the work. Soon many fields that had been irrigated could no longer be used, and those remaining in use could not produce food for both Indians and Spaniards. Large numbers of Indians died from disease and from lack of food. The population of the area decreased. Even today it is scarcely larger than it was in the time of the Inca Empire.

The Andean peoples today. Today about half of the inhabitants of Perú, Ecuador, and Bolivia are pure-blooded Indians. Few of them have made any great changes in their ways of living since the time of the Inca Empire. They still make their living by subsistence farming, renting their farms from other owners, or they spend their lives as farm laborers on haciendas owned by people of Spanish ancestry.

On the coast important commercial cities, such as Lima, have developed as a result of the Spanish conquest. The inhabitants of the cities are white and mestizo, and their ways of living are much like those of city people everywhere.

CUSHING

Compare this hut with those in Central America. Why do these Indians build with stone rather than wood?



The Andean Countries on the Map

On the map of South America, pages 56-57, notice that the Andean countries, like the Caribbean countries, lie entirely within the tropics. The Andean countries have, therefore, little change in temperature from season to season. Which of the three countries extends across the equator into the northern hemisphere? In which country do the Andes reach their greatest width?

Notice that Ecuador is west of northern Perú. Bolivia lies to the east of southern Perú. Southern Bolivia lies to the east of a long, narrow country. What is its name? Study the shape of each Andean country until you can remember it and its location among the other South American countries.

Natural regions. You know that natural regions, those not made by man, reach right across national boundaries. Let us see in what natural regions these Andean countries lie. On this map notice that the Andes Mountains cover a large part of each country. East of the Andes in each country is a lowland. In Ecuador and Perú and northeastern Bolivia this lowland is part of the drainage area of the Amazon River. Be sure you see this on the map. It is covered with tropical rain forest.

The lowlands in southeastern Bolivia, however, are quite different. They are dry and become even drier as you go toward Argentina. These plains are a portion of a large area known as the Gran Chaco, which is shared by Bolivia, Paraguay, Brazil, and Argentina. On the map find the city of Santa Cruz in Bolivia. At about this latitude the north-

east lowland ends and the southeast lowland begins.

Both Ecuador and Perú have a coastal region. Which has the longer coast? Which includes a deep gulf? What is the name of the gulf? The coastal region of Perú is desert, some of it completely bare of vegetation.

PERÚ

Three regions. The Andes Mountains of Perú cover almost two fifths of the country. This area is so high that the two railroads which cross it must climb more than 14,000 feet above sea level. Here there is enough rain for agriculture, and in many of the valleys are small Indian farms.

The densely forested eastern lowland of Perú is by far the largest of the three regions. It occupies about half the area of the country. The Incas, who were used to the climate of the highlands, were unable to conquer the tribes living on this hot, humid lowland, and even today there are few settlements here. The rainfall is especially heavy from December to April.

The west coast, where the Spaniards built their chief cities, is the main commercial region in Perú. This narrow coastal strip is desert country, nowhere more than a hundred miles in width. However, so much farming is carried on in oases along the streams, that the coastal strip is now Perú's most important farming region.

Mountain farms. The Andes of Perú are still occupied chiefly by Indian com-



munities. The basins and valleys that were densely populated in the days of the Inca Empire are still used by the Indians. The Cusco Basin is crowded with Indians who work on large estates, raising grain for food. Small Indian villages with

their subsistence farms are scattered through valleys and on the gentler slopes of the Andes. These are permanent settlements, and they are changed little by what goes on in the outside world. The Indians raise their own food and in



JAMES SAWDERS—COMBINE

These Indians are threshing their wheat by hand in the Bolivian highlands. If there is a surplus of wheat, it will be carried to a nearby town market and sold.

some cases a small surplus, which is sent to the cities on the coast. The farmers of some communities, those most distant from other settlements, follow the slow, difficult methods of planting and harvesting used by their ancestors.

As in Colombia, different crops are raised at different altitudes in the highlands. In Perú, potatoes are grown at altitudes up to about 14,000 feet above sea level, barley up to 13,000 feet, and wheat up to 12,000 feet. Between 10,000 and 11,000 feet corn is the leading crop. Sugar cane can be grown at altitudes up to 8,000 feet, and bananas and oranges up to 6,000 feet. But the chief food crops raised in the highlands are corn and potatoes as in the days of the Inca Empire.

Mountain pastures. Above the areas in which agriculture is possible are bleak, wind-swept grasslands, used for the grazing of animals. The mountain grasslands in northern Perú provide pastures for cattle. Those in southern Perú, which are drier and too poor for cattle, are used largely for raising sheep, llamas,

and alpacas. Indians make their living by pasturing these animals and selling the wool for export. Commercial grazing, however, is not a native occupation but one learned from the Spanish settlers.

Much of the wool of southern Perú goes out of the highlands by railroad to the city of Arequipa, on the western lowland. Arequipa is the third largest city in Perú and is its chief wool market.

A mining community. One of the oldest and most famous mining communities in South America is Cerro de Pasco in the central Andes at an elevation of 14,700 feet. Find it on the map on page 95. For hundreds of years silver ore was obtained from this mine. Today little silver is left, but the area around Cerro de Pasco is still Perú's chief mining center. Ores of gold, lead, and especially copper are mined and smelted. Indians do the work in both the mines and the smelters.

The tropical rain forest. In the densely forested lowland east of the Andes, the weather is very hot and rainy.

EWING GALLOWAY

Gold mining in Perú. Gold-bearing gravel is shoveled into the trough. The gold, which is heavier than the gravel, collects between the slats nailed across the box.



Thunderstorms are common, and during the rainiest season the rain may pour down for days without stopping. These forests extend up the eastern slopes of the Andes. On some slopes the trees grow very close together; on others they are scattered. But the forest is especially dense in the valley bottoms. In the lowlands east of the mountains the forest is thick and tangled along the edges of the streams. Between the trees grow bushes and brambles over which vines climb. The streams flow into the Amazon, which flows for thousands of miles to the Atlantic Ocean. But away from the streams there is little underbrush, for here the sunlight cannot reach the ground.

Primitive settlements. Here and there in the forest are a few small settlements of Indians, who have little to do with the outside world. They produce practically everything they use except their machetes.

Indian hunters. Some of these Indians who live near navigable rivers are

in closer touch with people outside the forest. They build permanent huts in clearings, usually beside a stream on which they can travel in canoes. For food they fish with lines or spears. They also get food by hunting, and they use the animal skins for trade. These are sent by canoe to merchants at Iquitos, the only important commercial center in eastern Perú. The merchants then ship bundles of skins down the Amazon and thence by ocean to North America. On the map on page 95 find Iquitos. Using the scale of miles find the distance from Iquitos to the Atlantic Ocean.

Haciendas. In some places in the rain forests are haciendas, where sugar, coffee, cotton, and especially *coca* are raised. Coca is a small bush from the leaves of which a drug called *cocaine* is made. The plant is grown chiefly in the warm valleys on the eastern slopes of the Andes. Only these four hacienda products bring prices high enough to cover the great expense of transporting them to market.

The Indians who work on these estates

are highland Indians, hired to move to the lowland haciendas. They have their own small clearings in which they raise manioc, corn, and perhaps some coffee and sugar cane.

Difficulties of travel. Travel in eastern Perú is very difficult. Most of it goes by river. Ocean vessels steam up the Amazon all the way to Iquitos. Launches and canoes follow the winding streams along the foot of the mountain range. On the lower slopes of the Andes people travel by foot or on animals along the steep, slippery mountain trails. But because plants grow fast in this wet region, it is hard to keep the trails open. Until a few years ago the interior lowland was almost entirely shut off from Perú's chief population centers, on the west coast. The lowlands have not yet been developed; the forest is still a great barrier, and rivers are the only natural routes of travel.

Improvements in travel. These slow methods of travel are now being replaced. Today, airplanes follow the old river routes. Also, a new motor-truck road has been built from Lima across the Andes to Pucallpa on a branch of the Amazon. Find this road on the map (page 95). The trip takes only two days and the road can be used in all kinds of weather. The time needed to travel by boat from Pucallpa to Iquitos depends on the season and the roughness of the river. Even during the worst season for travel, however, the trip from Lima to Iquitos takes much less than a month.

The coast region. On the desert coast of Perú, no crops can be grown unless the land is irrigated. Though more than fifty streams flow from the highlands to the sea, only ten flow throughout the year. These become lower during the

dry season, which begins in June or July and lasts until October. Since the weather is never cold enough for frost, the irrigated land along the streams is used for valuable crops that need warm weather the year round. Of what part of our country does this coast remind you?

A sugar plantation. Most of the Peruvian sugar plantations are in the northern valleys of the coastal plain. Here are about thirty large estates and also many smaller ones. We shall describe one of the large sugar haciendas, several hundred miles northwest of Lima.

This is owned by a company of Peruvians. It is so large that it employs about a thousand laborers, most of whom are Indians. They are directed by a manager, who has also many trained men and clerks to help him.

After the day's work is over, the Indians go to their village of small huts near the mill. Many of them cultivate small farms in the mountains when they are not needed on the sugar estate.

Planting sugar cane. A planting in Perú will produce excellent cane for several years. In planting a new field, the laborers plow and harrow the land. They make trenches a few feet apart in the fields. In these trenches pieces of sugar cane having at least one joint are laid and covered with soil. In a short time the young stalk of cane springs up growing from a joint. Then leaves begin to appear, and in a few weeks the stalk has grown tall enough for the new joints to be seen.

While the growing cane is small, the laborers cultivate the ground to keep down the weeds. They also irrigate the fields, for sugar cane requires plenty of water. Irrigation ditches run along the sides of all the fields.



JAMES SAWDERS—COMBINE

Mule train at a river crossing. *Often it is necessary to transport goods on the backs of mules, for they are able to travel along mountain trails over which trucks cannot drive.*

After about a year and a half from the time of planting, the cane is ready for cutting. It can be cut about five times before it must be replanted.

Harvesting the cane. When harvesting cane, the laborers first burn off the leaves so that the stalks, which grow close together, can be reached more easily. The skilled plantation workers do this without harming the stalks. Then the cane is cut and taken to the mill.

The stalks must be ground soon after they are cut so that none of the sweet juice will be lost. The mill on this huge sugar plantation stands beside the highway. Sections of railway track small enough to be moved easily are laid in the fields so that the cane can be transported on railway cars to the mill. This is a *narrow-gauge* railway, one with its rails

closer together than the ordinary railway. After one part of the cane field has been cut, the sections of track are moved to another part. The harvesting is spread over ten months of the year. In the two cooler months of July and August, repairs are made on the mill.

Sugar exports. Peruvian sugar cane is grown chiefly on the estates northwest of Lima around the city of Trujillo. These plantations yield millions of pounds of raw sugar a year, most of which is exported. Short railways connect the estates with ports from which the sugar is shipped to Great Britain and the United States. Because the plantations are near the seaports, the growers are spared the expense of transporting their raw sugar to a distant port.

Fertilizer. The sugar plantations are



CUSHING

One of the Guano Islands. These birds catch thousands of fish each day from the waters of the Perú Current.

fertilized with *guano* and *Chilean nitrate*. Guano is the manure of sea birds, particularly large fish-eating birds such as cormorants and pelicans and gannets. More than twenty kinds of big sea birds live on the small, treeless, rocky islands off the coast of Perú. Often they fly in such large flocks that they darken the air close to the water.

Every two and a half years each island is visited by Indians, sent from Perú to gather this natural fertilizer. Laws have been made prohibiting the gathering of guano more often than that, for the Peruvian government does not wish the supply to be used up as it once was. The Indians scrape off the dry guano, put it into gunny sacks, and load it into boats. Some of it is exported, but only after the Peruvian estates have been supplied with all the fertilizer they need. This fertilizer is much in demand in other countries. But the Peruvian government believes that the needs of its cane fields should come first.

Nitrate, which is also used to fertilize the cane fields, is imported from Chile,

where it is found in beds of rock in the desert lands. You will read about nitrate when you study Chile.

Cotton farms. Peruvian cotton is a more important crop than sugar cane. Most of the cotton is grown in the coastal oases near Lima, but valuable long-fiber cotton is raised in the most northern oases in Perú. Cotton is raised on both large estates and small farms. Japanese *immigrants* own some of these cotton farms. (An immigrant is a person who has moved from one country to another, intending to remain.) They employ as laborers other Japanese and Indians, who come down from the highlands to pick cotton from April to September, or in the north from July to November. The owners of the farms always need field hands during the picking season. The value of the cotton which Perú exports every year is second only to the value of the petroleum sent out of the country.

Food for the city people. Around Lima much of the irrigated land is used for gardens to supply food for people who live in the cities of Lima and Callao, the

chief port of Perú. There are also vineyards on this part of the coastal plain. These irrigated farm lands are separated, however, by stretches of desert.

The Perú Current. Though Perú lies in the tropics, the climate along the coast is warm rather than hot. The climate is much cooler than that of the east coast of South America at the same latitudes. This is due to the cold Perú Current, which flows northward along the west coast of South America as far as southern Ecuador. As the south and southwest winds blow across the cold water, the air is cooled. (A wind is named according to the direction from which it blows. A south wind is one from the south.) The air can pick up much less moisture by evaporation from cool ocean water than from warm. After crossing the coastal strip, it is forced to rise at the front of the Andes. As the air rises, it is further cooled, and clouds form. These are especially thick in the winter, from June to October, when the winds are strongest. But little rain comes from them, for the air carries little moisture. The coast gets scarcely a shower all year, although the sky may remain cloudy much of the time. The temperatures are never so high as they would be if the sun were shining.

The part of the Perú Current that is under the cloud and protected from the sunlight is abundant with fish and other marine animals. These provide food for the millions of sea birds that haunt this part of the ocean. The valuable guano builds up on the islands because there is very little rain to wash it away.

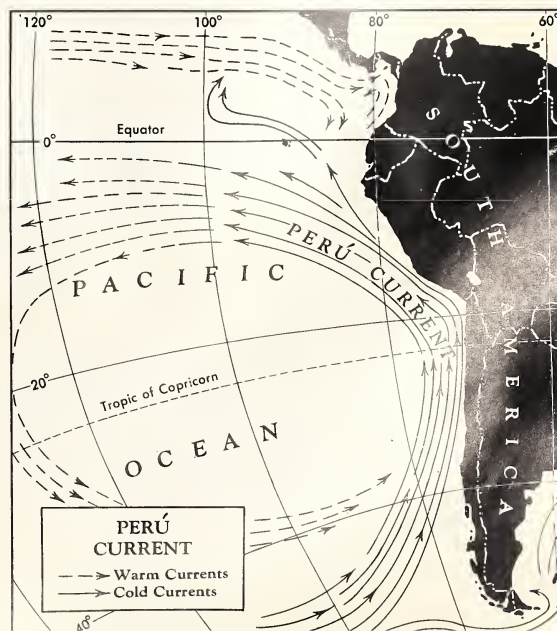
The oil fields. In the extreme northwestern part of Perú are three oil fields close to the sea. For many years oil of good quality has been exported from

these fields, though the amount produced is less than in Venezuela and Colombia.

Perú has little need for its own petroleum. Oil is not required as fuel for manufacturing, for the machines are run by electricity generated by falling water. Oil is not used for heating and cooking purposes because few people can afford to buy it and few homes are heated. Gasoline is used in only small amounts because the number of automobiles in the country is not large.

Lima and Callao. Lima, eight miles inland from its port, Callao, is the largest city in Perú and is the nation's capital. It has a population of over 500,000.

During colonial days most of western South America came under the rule of Lima. Pizarro chose this location for his capital for two reasons. First, the broad plain on which Lima is built is one of the larger coastal areas with water for irrigation. The Río Rimac brings down an abundant supply of water. Second, there is a very good harbor near by at Callao, where ships can anchor in calm water. This harbor is sheltered by an



offshore island and a long peninsula that points toward the island from the mainland.

Today the population of Lima includes large numbers of government workers who have come from all parts of Perú. The city receives most of the country's imports, and most of the important businesses of the country have offices here. Lima is also a center of art and education; it has the oldest university in South America. To this university come students not only from Perú but also from beyond its borders.

Lately Lima has become an important industrial city. It has cotton, woolen, and knitting mills, cottonseed oil factories, lumber mills, flour mills, and factories of other kinds. Among the old Spanish buildings have appeared modern factories and office buildings, which make Lima more and more like other modern cities.

Even though there are factories in Lima, Perú is not an industrial country. More than four fifths of the people make their living by cultivating a very small part of the land.

ECUADOR

Ecuador, the small country lying between Colombia and Perú, is not a prosperous country. As you read about Ecuador, try to learn reasons for this. From the map you may see why the country so is named. *Ecuador* is a Spanish word that means "equator."

Three regions. You already know that Ecuador, like Perú, has three surface regions. One is the Andes Mountains, which in Ecuador consist of two chief ranges with mountain basins and valleys between. The western range is so high

that it has long been a great barrier to transportation. Besides these high mountains, a range of hills runs along the northern part of the coast. The Andes Mountains are Ecuador's most thickly settled region. To the east of the highland is a very small part of the Amazon Lowland, which has few inhabitants, mostly Indians. The lowland is connected with the highlands by only a few trails, which become very muddy during the rainy season. The only commercial product from this region is rubber. To the west is the coastal lowland, a small but very important part of the country.

The highlands. At least three fourths of the people of Ecuador live between the two great ranges of the Andes. Most of these people are Indians who have small subsistence farms in the mountain basins that lie in a chain running north and south. Their villages are shut off from the rest of the world by high mountain walls. The Indian farmers grow wheat, corn, barley, beans, and potatoes. In the higher parts of the mountains, above the farm lands, are grasslands where cattle are raised. Small numbers of these cattle are sold outside the region. The animals are driven over the mountains to the coastal lowland pastures where they are fattened before they are marketed.

Panamá hats. On the map (page 95), locate the town of Cuenca, in a southern mountain basin. Next to Quito, the capital, Cuenca is the largest city in the highlands of Ecuador. Cuenca is one of the centers for the weaving of Panamá hats. The weaving is done by Indians; the straw from which the hats are made comes from the coastal region.

Quito. The capital city, Quito, is in the highlands almost on the equator and



JAMES SAWDERS—COMBINE

Quito from the north. The hills in the background are used for crops and pastures.

over 9,000 feet above sea level. Near the city are about thirty active volcanoes, some of them among the largest in the world. At night the clouds are often reddened by the reflection from the hot lava within the craters. No one can tell whether any one of these volcanoes is dangerous. Any one of them, after remaining quiet for hundreds of years, may erupt without warning.

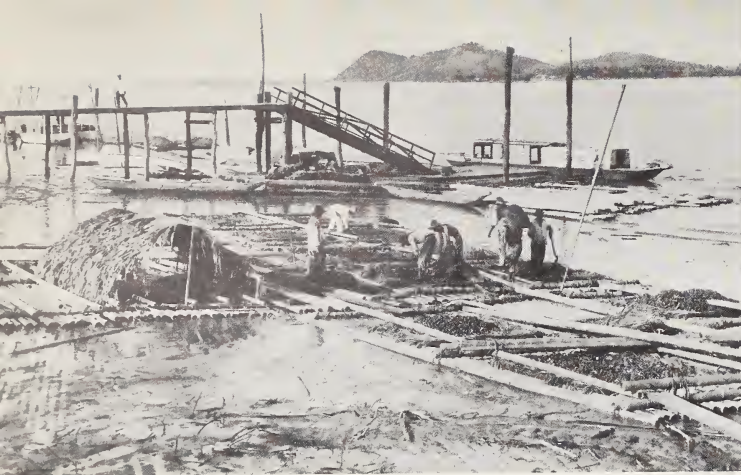
Quito, an old Indian city, was important in the time of the Inca Empire. Even today it is the center of the Indian communities, but it has little trade. In Quito are the homes of government workers and of landowners who have large estates near by. Both landowners and government workers are mainly of Spanish ancestry.

The coastal region. If you were to travel on the coastal lowland of Ecuador

from the northern to the southern end, you would pass through several kinds of country. From a tropical rain forest in the north this region changes to a desert in the south. The desert is part of the same coastal desert you learned about in Perú. It is not so productive, however, because of lack of fertilizer.

The population of coastal Ecuador also changes from north to south. In the north a large part of the population is Negro. Farther south along the coast are many communities of Indians. Still farther south, around the Gulf of Guayaquil, are many mestizos and white people who are engaged in trade.

The Guayas Lowland. The part of the coastal lowland that is of chief importance for trade is north and east of the city of Guayaquil and along the eastern shore of the Gulf of Guayaquil. Locate



EWING GALLOWAY

The tagua nuts grown in the north of Ecuador are shipped many miles downstream on rafts made of logs to the Guayaquil port.

this region on the map (page 95). It is the most productive part of Ecuador. Its leading products are cacao, bananas, and coffee. Also, cattle are grazed on the low mountain slopes during the rainy season and on the wet parts of the river plains during the dry season.

Cacao. The cacao from Ecuador is thought by manufacturers of chocolate candy to have an especially good flavor, and for over a hundred years Ecuador has produced cacao for export. During the last twenty years, however, Ecuador has dropped low among cacao-producing countries in the quantity of cacao exported. Many of the planters have left their estates to the care of paid managers while they themselves have lived in foreign cities. The plantations have been used to make money for the owners. Much of this income has been spent in foreign countries. Little has been used to take care of the trees and to make the plantations more productive. Many of the cacao trees have become diseased. Not enough new trees have been planted to keep the production of cacao high.

Tagua nuts. Locate the Río Guayas on the map. Sailing from Guayaquil up the Río Guayas, one sees dense forest

along the river banks. In the forests of the upper Guayas Valley grows the *tagua palm*. The nut of the tagua palm has a hard, white kernel that looks like the ivory from an elephant's tusk. This material is called tagua, or vegetable ivory. Tagua is used for making buttons because it will not crack easily and will not change its appearance through many washings and dry cleanings. Tagua is also used in making umbrella handles, jewelry, and small ornaments.

Minerals. Ecuador is not rich in mineral resources. In the coastal region are a few gold mines, which export small amounts of this precious metal, and an oil field. However, the oil produced is a very small portion of all the oil exported from Latin America.

Guayaquil. The city of Guayaquil lies on the Río Guayas at the point farthest upstream that can be reached by ocean steamers. Guayaquil is Ecuador's largest city and the chief port of the country, and is connected by railroad with Quito. The railroad, built at great cost, goes up the steep western slopes of the Andes, winds eastward over high, rugged wasteland, and then runs northward through the basins inhabited by

Indian subsistence farmers. Finally it passes over mountain ridges to the basin in which Quito is situated.

In your study of Perú you learned that Lima is not only the capital city but also an important trading center. In Ecuador, however, trade is centered in one city, Guayaquil, and government in another, Quito.

Reasons for poverty. Ecuador is a small country with a small population and few natural resources to bring it wealth. It is occupied largely by Indians who prefer to live on high, well-drained land and to raise subsistence crops of corn and potatoes. The swampy lowland is not of much use to them. Ecuador has little trade with other countries and the larger part of its population has little to do with its trade.

BOLIVIA

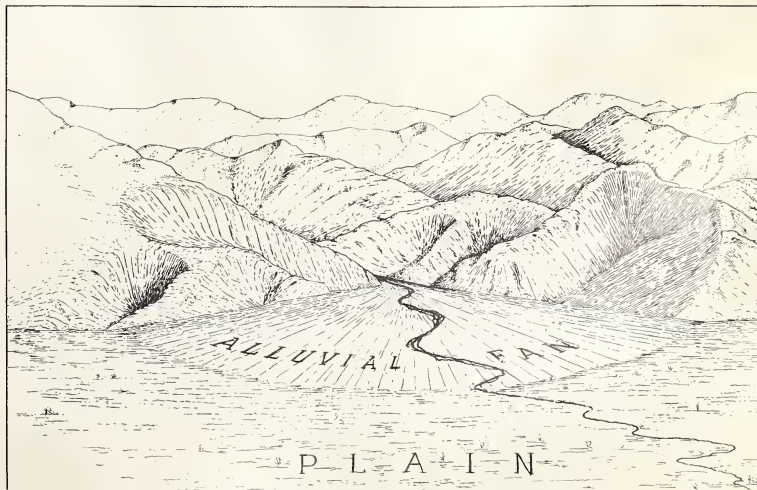
The land. Notice on the map on page 95 that at latitude 18°S the Andean mountain region is about 400 miles wide. Bolivia is about one-third mountainous and about two-thirds lowland. As we have seen, the plains in the southeast are a part of the great lowland region known as the Gran Chaco. Most of the Bolivian people live in the mountainous third of the country.

Farming in the highlands. Farming in Bolivia is carried on entirely by Indians who either work on small farms or live as tenants on large haciendas. In the highlands the fields are small and the crops so poor that not enough food is produced for the population. Supplies must be brought from the eastern slopes of the Andes and from other countries.

The Titicaca Basin. In the basin of Lake Titicaca, partly in Bolivia and partly in Perú, there were numerous small Indian communities even before the time of the Inca Empire. Today many such communities remain. Here the Indians have made few changes in their way of living through the centuries. They subsist on their own crops of barley and potatoes and raise sheep, llamas, or alpacas. Cultivated fields and small villages cover the bottom of the basin and the terraced slopes.

South of the Titicaca Basin the land is drier and there are fewer settlements. These are on the *alluvial fans* built above the basin floors by mountain streams. Alluvial fans are made up of all the soil, sand, and gravel that the streams leave behind them as they flow out of canyons onto the open floors of basins. The fan slopes gently from its point at the mouth of the canyon to its curved edge on the

An alluvial fan. Soil, gravel, and sand are carried from the mountains by the stream and dropped at the mouth of the canyon in the shape of a very large fan.





BOESEN FROM CUSHING

Lake Titicaca. Around the shores of the lake are farm terraces built centuries ago by the Indians. The Indians of today still use these terraces to grow grains and other crops.

basin floor. The Indian farmers occupying these alluvial fans live much as do those in the communities farther north.

An Indian farm in the highlands. Southeast of Lake Titicaca on a bleak, stony plateau 13,000 feet above the sea is a deserted Indian village. All the houses in this village are in ruins except one in which an Indian farmer and his family live.

The man does not own the land or know who owns it. He is a squatter who will live for a time on this land and then move elsewhere. The man and his wife work on the farm with the help of their two grown sons and a daughter.

Their home is made of adobe, with a thatched roof and a floor of earth pounded hard. In its one room are a bed, a chair, food for the family, feed for the sheep, a plow and harness, and an old sewing machine. The sons and the daughter sleep on mats on the floor. The cooking is done in a nearby shed.

Small bushes gathered from the plateau are dried and used as fuel. Water is carried from a mountain spring.

Near the house the men have planted a patch of potatoes. In this cool, cloudy highland, potatoes will grow from November to May, even though there is an occasional frost. Since this farm is south of the equator, the warmer part of the year comes during our wintertime. On other farms at this altitude, Indians raise quinoa and barley to provide green feed for farm animals, not to provide ripe grain. But this farmer raises only potatoes; he dries them for use throughout the year.

The family has two burros, used as pack animals, and about a dozen sheep, which graze on the plateau with other sheep belonging to Indians in neighboring villages. The villagers take turns in caring for their flocks of sheep and llamas.

The farmer's wife uses part of the wool in making clothing for her family. The

small surplus of wool is sold in a near-by village market. The money received is used to buy sugar, salt, and cotton cloth. Sometimes these highland Indians buy dried beans or perhaps corn brought up from the lower, warmer slopes of the highlands. They hardly ever grow enough food to live on.

The Indian's way of living. People in the world, as you have seen, live differently from place to place. Our way of living would seem unusual to these Indians. They are satisfied with their own way of living, just as we prefer ours.

Cochabamba. The agricultural area in Bolivia that produces the largest crops for its size is the basin of Cochabamba, southeast of the city of La Paz. There are more people to a square mile in this area than in any other part of Bolivia. The city of Cochabamba is the second largest city in Bolivia.

Many different crops are raised in the basin, including corn, barley, alfalfa, and fruit. The larger farms are owned by whites and mestizos. Indians live and work on the farms as tenant farmers or hired laborers. They have plenty of vegetables to eat and often meat, too. There is always enough corn from which

to grind all the corn meal they need. Wheat is also grown in the basin. The Indians cut it with a sickle and thresh it by driving oxen over the straw. Then the grain is ground into coarse flour.

Cochabamba is only 8,500 feet above sea level and in the coldest month the usual temperature is not much lower than 60°. Since the valley is more comfortable to live in than the highland towns, the people do not need heavy clothing.

Other farming areas. The other valleys in the eastern range of mountains are also populated by farmers. On some farms are fine vineyards and orchards in which oranges, olives, pears, peaches, and apples are raised. The narrow ribbon-like valleys are garden spots.

These eastern valleys are comfortable and productive. The white landowners would like to raise more and larger commercial crops, but they need a cheap method of transporting their products to market. Grain is bulky and expensive to transport except by up-to-date methods. Fruit spoils so easily that it must be shipped quickly. The chief problem of the commercial farmers is to obtain fast and cheap transportation for their products.

JACOBS FROM THREE LIONS

The top of the Andes south-east of Lake Titicaca looks like a plateau but is really made up of mountain basins.



Potosí, an ancient silver town. More than four hundred years ago, according to a legend, an Indian in the eastern highlands of Bolivia pulled a bush out of the ground and noticed tiny bits of dull-colored metal on the roots. This metal was silver. By accident the Indian had discovered the treasure mountain at the foot of which is the town of Potosí (map, page 95). The summit of this mountain is more than 15,000 feet above sea level.

The Spaniards who conquered the Inca tribes heard of the treasure mountain when they were searching the land for gold and silver. Potosí was hard to reach. Since it was one of the highest towns in the world, the weather there was, as it is today, often snowy and always cold. There was little fuel to keep their fires burning. But the Spaniards endured these hardships because they were eager to obtain silver.

They began to mine the silver, forcing the Indians to do the work in the mines. The Indians had to transport the ores hundreds of miles to the Pacific Ocean on their own backs and the backs of mules. The conquerors shipped much silver back to Spain.

The silver mountain of Potosí supplied Spain with more and more of the precious metal. The Spaniards left other mines to work in this one. The mines around Potosí yielded so much silver that the city became one of the greatest silver producers in the world. In fact, about half of all the silver produced in the world from the Spanish conquest to the year 1600 came out of this one mountain. Potosí became one of the largest cities in all America. It soon had 160,000 people, even though it was not an easy place in which to live.

There were other ores, especially tin,

in the mountains. The Spaniards, however, did not mine the tin, for at that time it could be obtained cheaply in Europe.

Potosí, a ghost town. After 1600, the mines around Potosí produced less and less silver. Most of the rich ore had been mined, and what was left could not easily be reached. People began to leave Potosí because they could no longer make a living there. Potosí became a ghost town and remained such for more than two hundred years.

Potosí today. Shortly before the year 1900, many new uses were found for tin. For example, the steel cans in which food is put up are coated with tin. Tin was now wanted by many people and would bring good prices. So miners went to the treasure mountain for tin rather than silver. People began to move back to Potosí, and today more than 35,000 people live there.

Tin exports. Today, silver is still found in the mines of the eastern Andes and is one of Bolivia's important exports. But Bolivia's tin has become more important than its silver. Tin has been found in the eastern range of the Andes all the way from just south of the Peruvian boundary to the border of Argentina. Some of the newer tin mines are more important now than those at Potosí. Bolivia's mines supply over a fourth of all the new tin produced every year in the world. Tin is now the chief export of Bolivia.

Other minerals from Bolivia. About a fourth of the *antimony* mined every year comes from México, and another fourth comes from Bolivia. Antimony is a soft metal needed in several industries. Some antimony is used in every automobile engine.



JAMES SAWDERS—COMBINE

A street in Potosí. Behind the bronze statues stands the famous treasure mountain. Although little silver remains, Potosí is again a prosperous mining town because of its tin.

Bolivia exports much *tungsten*, a brittle, grayish metal which is hardly ever found separate from other matter. Tungsten is used to harden steel for engine parts and for the cutting edges of machine tools. The *filament*, or threadlike material, which glows in an electric-light bulb is made of tungsten because it can be heated to a high temperature without melting.

Other important minerals produced in Bolivia include lead, zinc, and *bismuth*. Bismuth is yellowish red in color and is used in medicine and in glass-making. Face creams sometimes contain bismuth.

Laborers in the mines. The people in the mining towns are generally pure Indian. Indians do all the labor for low

wages. They live and work high up on the treeless, barren plateau where the weather is cold by day and icy by night. Few people in our country are ever up so high even when they fly in a commercial airplane.

The capital city. La Paz, the most important city of Bolivia is on the eastern edge of the Titicaca Basin. A traveler approaching La Paz from the southern end of Lake Titicaca does not see the city at once. He sees only the basin floor rising gradually toward the steep side of the eastern range. This is a great mountain wall with snow-capped peaks reaching over 20,000 feet above sea level. When the traveler is within about three miles of this mountain wall, he finds



La Paz is located in a deep canyon cut by a river at the eastern edge of the Titicaca Basin. To the east of the river are the high Andes.

himself near the edge of a deep *chasm*, or canyon, cut by a river. At the bottom of the chasm, 1,400 feet below the plateau, lies the city of La Paz, the world's highest large city.

This location for La Paz was chosen by the Spaniards. It is on the road from Lima to the silver mines in the highlands. The Spaniards saw that the valley walls furnish protection from the cold winds that blow down from the snowy Andes. But because La Paz is 12,000 feet above sea level, the air is thin and there are sudden changes of temperature.

The city serves as Bolivia's center of government although the city of Sucre was made the capital by law. Sucre is so hard to reach from all parts of the country that La Paz has become the real capital. Two railroads, built at great cost, wind their way down to the city.

La Paz has trolley cars, electric lights, a telephone system, waterworks, and well-paved main streets. There are a few factories and a large university. The city is the most important trading center in Bolivia.

The owners of the tin mines have much to do with the government of the coun-

try. Therefore, you will find many of them in La Paz. But the vast majority of the city's inhabitants are Indians. On market day La Paz is crowded with Indians who come from small farms, some as many as fifty miles away.

Llama caravans. On market days Indians from the highlands drive their llamas loaded with farm products along the trails toward the city. What products would they bring to market? Caravans from the lowlands bring rice, coca leaves, bananas, nuts, peppers, chuño, sugar, and sirup.

The llama can travel through dry mountains for days without water. It can live for months on grain stalks and moss, which it nibbles here and there along the trail. It is a sure-footed animal and can climb rocky ridges easily and safely. Even in the thin Andean air it can carry a light pack on its back for long distances.

As the Indians plod along the trail to La Paz, sometimes every llama in a caravan stops and lies down to rest. Then the Indians sit down, too. They draw around them their heavy wool *ponchos*, or blanket-like cloaks having a

hole in the middle for the head. When llamas need to rest, they lie down and cannot be made to get up either by beating or by tugging at them. So the Indians wait patiently until the llamas are rested and ready to start again.

Many trails meet at La Paz. As the caravans go down the steep slopes to the city, the pack llamas crowd closely together, for the streets are narrow. The natives step into the doorways or stand close to the great stone walls to let the llamas pass. If persons do not treat a llama the way it likes to be treated, it may spit at them. But the Indians understand the llama. They know it is the only animal that will carry their burdens at sixteen thousand feet above the sea. They depend on it for meat and wool, too.

Need for transportation. Bolivia has many roads that can be used by automobiles during part of the year, but the country has only a few good, all-year motor roads. They are short, leading perhaps to a mine or a short distance out from some city, such as La Paz. There are few vehicles to use such highways. In all Bolivia there are fewer wheeled vehicles than we would find in one small

city in the United States. A small quantity of goods is transported by railroad.

The lowlands. The population of the Bolivian lowlands is small. Northeastern Bolivia is rainy and southeastern Bolivia is dry. In both parts of the country the chief lowland settlements are at the eastern foot of the highlands. Much of the land far to the east is used little, if at all.

CHANGES IN THE ANDEAN COUNTRIES

People in the governments of the three countries and many of the businessmen are trying hard to locate and develop new resources. They are also teaching the Indians to develop hand crafts like those their ancestors had at the time of the Incas. Their pottery and rugs and baskets bring high prices when they are exported to other countries. But these changes can be made only very slowly because of the great differences between the two groups of people—the landowners and the Indian farmers—and the difficulties of transportation. For lack of rapid, modern transportation, the Andean countries can hardly make good use of all their territory.

JAMES SAWDERS—COMBINE

The Indians of Bolivia make boats from reeds, which grow along the rivers and lakes. The bales will form the main part of the boat.



Understanding What You Have Learned

Prepare a bulletin board display or an exhibit table showing different products of Perú, Ecuador, and Bolivia. Bring pictures of the animals seen there. Bring as many samples as you can of the farm products and minerals that come from these countries. Write labels telling from what part of each country these products come, and at what altitudes the various crops are grown.

UNDERSTANDING NEW WORDS

Make a chart with these five headings: people; natural things; raw materials; things that man has built; products. Now list each of the following words or word groups under its proper heading.

llama	chuñu
narrow gauge	alpaca
alluvial fan	bismuth
suspension bridge	quinoa
hacienda	chasm
antimony	casa grande
solstice	tungsten
immigrants	tagua palm
filament	Gran Chaco

EXPLAINING WHY

1. Explain why many of the large landowners in the Andean countries do not use up-to-date methods of farming. How does their failure to do so affect the Indian tenant farmers?

2. Why was Lima founded? Explain the reason for the location chosen.

3. Why did the Inca travel in a chair carried by men instead of in a carriage?

4. Tell why the location of the city of La Paz helped it to become important. (Clue: Why did the Spaniards choose the location?) Describe the countryside around La Paz.

5. Why do few people other than those who work in the Bolivian mines live in the mining towns?

6. Why are the guano islands very important to Perú?

7. Explain why the coast of Perú has a mild climate, never very warm and never cold. You should give at least three reasons.

MEASURING DISTANCE ON MAPS

Maps show distance by means of scales of miles to represent actual miles on the surface of the earth. On the map on pages 56-57 find the scale of miles. Using this and a ruler, figure how far you would have to travel if you flew from Rio de Janeiro to Buenos Aires; from Bogotá to Santiago; from Panamá City to Natal; from Quito to La Paz.

Turn to the map on page 95, and again measure the distance from Quito to La Paz. Do your two answers agree within fifty miles? Why do they not agree exactly?

TAKING A TRIP

Plan a trip from Lima to Iquitos. What means of transportation would you use? Measure on the map the distance in miles from Lima to Pucallpa and from Pucallpa to Iquitos. How long would this trip take?

USING MAPS

1. Turn to the map on page 88 and show the extent of the Inca empire. Why did the Inca Indians seek the lands of other Indian tribes?

2. Which of the three countries we have just studied is crossed by the Tropic of Capricorn? By the equator?

3. Find Arequipa on the map and describe its location. Why did this become one of the largest and most important cities in Perú?

4. Using the map on page 95 measure the distance from Cusco, the old Inca capital, to Lima, the Spanish capital of Perú. Over what kind of land must one travel on a journey between these two cities? Why would you like or dislike to take such a journey?

5. Describe the location of Quito. Why is Lima in a better position for trade than Quito?

6. Show a location in the Andean countries in which the people:

- are nomadic
- have permanent homes
- are mostly Indians
- are mostly white
- are self-sufficient
- carry on trade

7. Using the maps on pages 61, 63, and 101, explain the connection between the Peruvian coastal desert and the Perú Current. Why is the northern part of the coast of Ecuador not a desert?

COMPLETING SENTENCES

(Do not write in this book.)

1. A number of years after Potosí first became important, the people began moving away because—.

2. The llama is useful to the Indians as a beast of burden because—.

3. The people of the Andean countries have made slow progress in the development of their industries because—.

(Clue: What kind of transportation is found there?)

4. After the Spaniards arrived, the Indian population became smaller because—.

5. The Inca Indians needed good roads because—.

TESTING YOUR UNDERSTANDING OF THIS CHAPTER

1. In what kinds of houses do most of the Indians of Perú and Bolivia live?

2. List ways in which the Andean Indians of today resemble the Indians of the ancient Inca Empire.

3. In what ways may the influences of the Spanish conquerors be seen in the Andean countries today?

4. Why is much tin being mined in Bolivia today?

5. What advantages for farming have the owners of the haciendas on the Peruvian coastal lowland?

6. Write a paragraph explaining how the Inca Indians and their Spanish conquerors differed in their ideas about owning and using land.

7. Write down the important metals which are mined in Bolivia and name at least one way in which each metal is used.

8. Show by pencil sketches the kinds of work that have to be done on a sugar estate, such as planting sugar cane. Give each sketch a title.

9. List all the things which you know that help to cause the climate of a region.

10. Tell as many differences as you can between the use of the land by the Inca Indians and by their Spanish conquerors.



FISHER FROM CUSHING

Open-pit copper mining in northern Chile. As the ore is removed by steam shovel, terraces are left on which trains transport the ore to the smelter on the edge of the great pit.

Chile

Chile stretches for a distance of 2,630 miles along the west coast of South America from about latitude 18° south to latitude 56° south. Thus it is partly in the low latitudes and partly in the middle latitudes. It is nowhere more than 250 miles wide. Northern Chile is one of the driest regions in the world; southern Chile is one of the rainiest. In between lies the very small part of Chile that has a comfortable climate. Most of the Chileans live in this part of the country.

Most of the people of Chile are mestizos descended from Europeans and from the most warlike Indians in South America. The chief occupations are farming and raising livestock. In the other South American countries about which you have read, the landowners are mostly of European descent and the workers on the haciendas are usually Indians or mestizos who are largely Indian. In Chile the landowners and the working class are much the same in race, and all speak the

same language. Except in the cities, the important difference between these two classes of people is that one class owns land and the other class does not.

From the hacienda to the small farm. At one time most of the land was owned by a few people and was worked by a great number of tenants. As in México, Ecuador, and other Latin American countries, the landowners were very wealthy, and they used their incomes to build fine homes, to travel in Europe and live there part of each year, and to educate their children there. The tenants were very poor and were allowed only a bare living.

The whole countryside was divided into great haciendas owned by a few *patrones*, or masters, each of whom had many *inquilinos*, or tenant laborers, working for him. Though the landowners were not always rich, they owned the haciendas or belonged to a family that owned land. The *inquilinos* owned no land and most of them were poor. They were free to move about as they chose, but they usually stayed on the land on which their ancestors had worked. The patron provided the *inquilino* with poultry, some work animals, and one or two pigs, and he might keep a few dogs. The *inquilino* also received some pay in money. For about two thirds of the year he must work from sunrise until sunset.

Today these ways of living are being changed. As happened in México, the large haciendas are becoming fewer, and the small and middle-sized independent farms are increasing in number. Many tenant farmers have left the haciendas to make small farms of their own on new land or to work in the cities. Thus, although many more people own land, fewer people are left to work on the farms.

And each farmer has a larger part of what the land produces. Therefore he has a better living.

From a farming to an industrial nation. What is happening to the workers who are moving to the cities? More and more of them are being employed in the new industries developing in Chile. Cities that were once market centers only are becoming industrial centers. Already Chile uses more factory machines for the size of its population than does any other Latin American country.

As you read this chapter you should try to see the differences between old and new Chile. You should notice what is happening in the lives of the people as Chile slowly changes from a farming to and industrial nation. This change is very important in geography, for it is also going on in many other parts of the world.

The manufacturing of steel and steel products is a new and growing industry in Chile.

JAMES SAWDERS—COMBINE





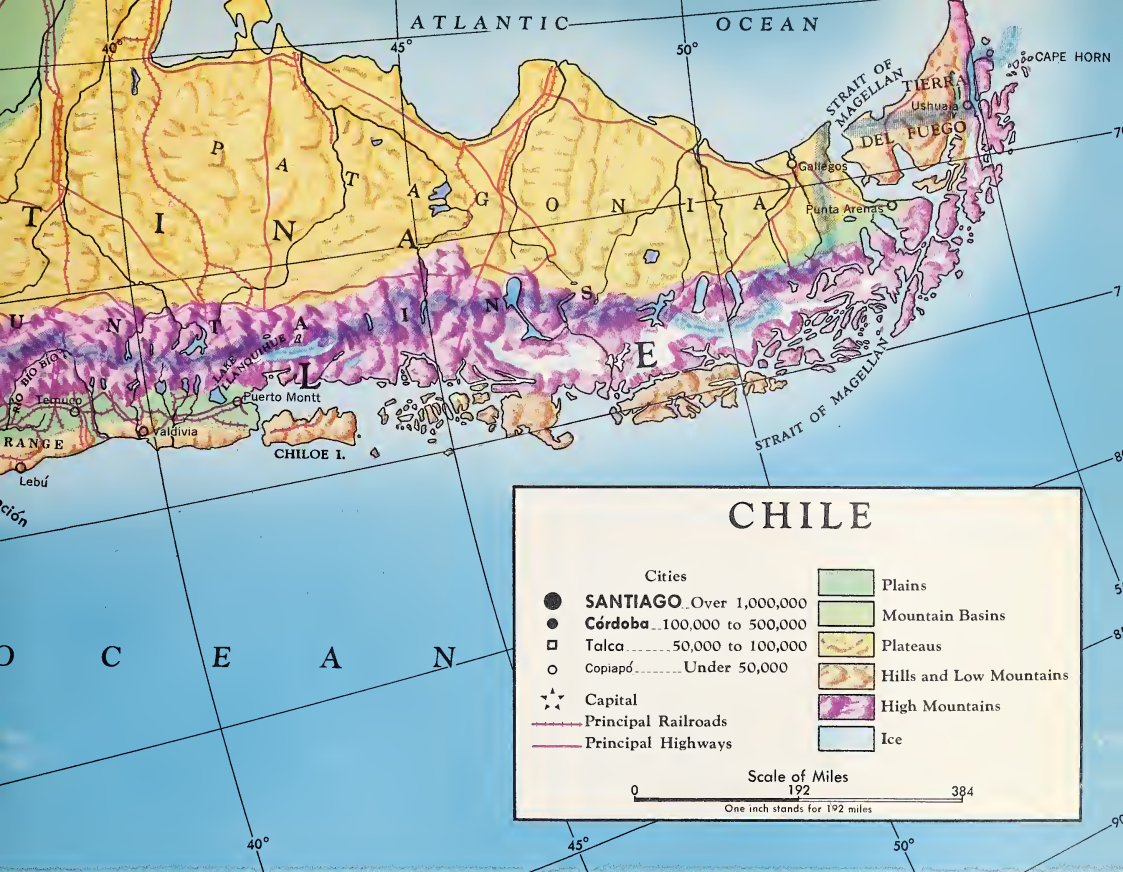
Learning About Chile from the Map

Barriers around Chile. You will notice on this map that Chile lies south of Perú and west of Argentina and southern Bolivia. But Chile is separated from the rest of the world on all sides by natural barriers of land or water. The northern part of Chile, next to Perú, is a barren desert, the Atacama. Find it on the map. Here the climate is the driest in the world. In only a few spots can any green growth be seen. Over large areas there is nothing but rock and sand. Men cannot live here unless water and food are brought from other regions.

In the south, Chile faces Antarctica, surrounded by stormy ocean dotted with floating ice.

To the west of the country lies the vastness of the Pacific Ocean. A traveler sailing west from Chile must go a long way before reaching any fairly large, inhabited land. If he sailed directly west from the city of Valparaíso (find it on the map) it would be about three weeks before he reached the northern part of New Zealand.

To the east, high mountains separate Chile from its neighbors, Argentina and



Bolivia. More than half of the area of Chile is occupied by the lofty Andean ranges. They form a great wall with only a few east-west passes. On the map locate Mount Aconcagua, almost 23,000 feet high, the highest peak in the western hemisphere (about 33° south latitude). Near it find Uspallata Pass. Here a railway line, which is blocked with snow every winter, slowly climbs and descends the long slopes. It goes through a tunnel under the highest part of the pass. Farther south the mountain passes are lower, and long, steep, winding trails lead over the mountains.

An archipelago. Notice the many islands, some large and some small, in

southern Chile. This is one of the world's largest *archipelagoes*, or groups of islands.

Three strips of land. We might say that Chile is made up of three strips of different kinds of land, the strips running north and south. The eastern strip is the Andes Mountains. The western strip is made up of the hills and low mountains of the Coast Range. The middle strip is occupied in the far north by a mountain basin, in which is the Atacama Desert, and in the middle by the Central Valley. South of the Central Valley the archipelago begins. Locate each of these strips on the map. Which is the longest of the three strips?

Three chief climates. A country that extends through as many degrees of latitude as Chile does is certain to have different climates. Those of Chile are extremely different.

In the Atacama Desert it is hot all day, often with dust storms in the afternoon. At night it is chilly. Both the land and the air above it are very dry. Only one river flows all the way across the desert to the Pacific Ocean. This is the Río Loa which has its source in the Andes. Find the Río Loa on the map. How can you tell that in this desert the weather changes very little with the seasons?

On the map on page 63 locate the southern end of the Atacama. Find it on the map on page 61. Here the yearly rainfall is four and one half inches. Farther south near the city of Concepción in middle Chile the rainfall is over thirty inches. Now find this area on the two rainfall maps on page 72. You will find that the rains come in winter and the summers are dry. There is always plenty of water for irrigation in the many rivers that flow westward from the Andes Mountains to the Pacific Ocean. The winters are mild, and the summers cool. Freezing weather sometimes occurs, but seldom is there snow in the valleys.

South of Concepción all the way to the southern end of the Central Valley the climate is quite different. Instead of wet winters and dry summers, the weather is rainy the year round—mild, rainy winters with cool, rainy summers (maps on page 72). The rainfall may be as much as a hundred inches a year.

South of the Central Valley to the very end of South America at Cape Horn, the climate is unpleasant. There are not

many places in the world that have more unpleasant weather. The land is almost always dimmed by gray clouds and driving rain, snow, or sleet. The rainfall is very heavy; in some places it is more than two hundred inches. The land is covered with a thick tangle of rain-soaked forests. The shore line is broken by jagged, rocky fiords. The storm-tossed waters of the Pacific beat savagely against the islands and the steep, rocky slopes in the fiords.

Dense and thin population. Where in Chile would you expect to find dense population? Certainly not in the Atacama, where years pass without rain and there is little water for irrigation. In the southern third of the country the climate and the rugged surface are not suitable for people who live like Europeans and grow European crops. On the map on page 11 notice that most of the Chilean people live in the Central Valley, which is only a very small part of the whole country. The soil is fertile because the rivers bring *sediment*, that is, soil and gravel, down from the mountains.

In learning more about Chile we shall begin with the Atacama and then move south through the pleasant Central Valley and into the rainy regions.

NORTHERN CHILE AND NITRATE

In the Atacama, Chile owns the only natural deposits of *sodium nitrate* known in the world. Sodium nitrate is a white salt important in making fertilizers and explosives. In the Atacama are beds of sand and gravel in which are large quantities of nitrate at or near the surface. The nitrate beds are found in an area more than four hundred fifty miles long and from five to forty miles wide.

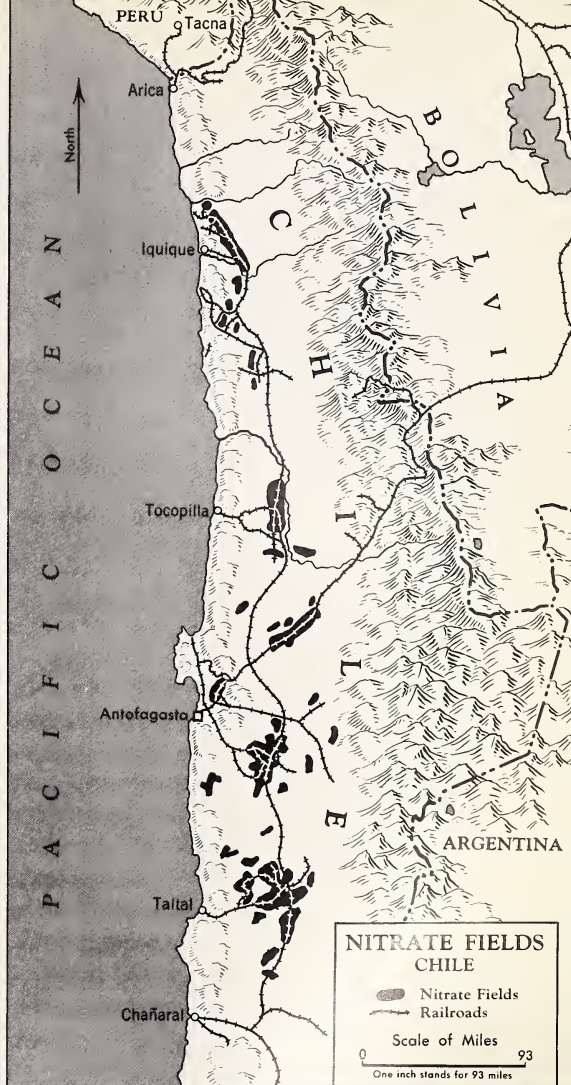
On this map notice that the nitrate beds are located just east of the Coast Range. Long ago these beds were lakes. The water in the lakes contained common salt and sodium nitrate, washed down from the high Andes. Later the climate became drier; no one knows why. The lakes dried up, leaving the nitrate and salt in the lake beds.

On this map find the port of Tocopilla in northern Chile. Much nitrate is exported from Tocopilla and from the ports of Iquique and Antofagasta. Find the nitrate beds just east of Tocopilla.

Let us visit a nitrate plant in this area. From Tocopilla we can travel inland to the nitrate fields either by railway up through a pass in the Coast Range or by automobile on the highway.

The workers. About seven hundred men work in this plant, which is owned by a United States company. Of this number perhaps five hundred are laborers from the city of Santiago and neighboring places who have come here hoping to get better wages. The rest are foreigners from the United States and Europe who are hired to direct the operation of the plant. The homes of the workers make up a good-sized village of well-arranged streets.

To support the workers in this rocky desert, supplies are brought from other regions in Chile. Water is brought by pipe line from far up in the Andes to the east.



JAMES SAWDERS—COMBINE

Waste material that covers nitrate is often broken up by blasting before it is removed.



The nitrate fields. The plant railway goes to the nitrate fields. Here rock and sand are removed by a machine that scrapes away the loose material. This waste material on top is about eight feet deep. Underneath lies the layer of sodium nitrate ore, which is about four feet thick. The workers use blasting powder to break up the hard layer containing the nitrate. This layer of material, known as *caliche*, is a mixture of gravel, sand, and nitrate. About one tenth of the caliche is nitrate. The rest is waste matter.

Big steam shovels load the caliche into railway cars, which take it to the central plant where the nitrate is separated from the waste material. First the caliche is crushed into small pieces. Next it is dumped into big vats and boiled. The hot brine is run into long troughs where it is allowed to cool. As it cools, solid crystals of nitrate, somewhat like rock salt, form in the brine. These are separated and dried. The finished nitrate is packed in bags and sent by railway to Tocopilla for shipment chiefly to the United States. There it will be used as fertilizer or in manufacturing explosives.

The caliche also contains *iodine*. The iodine you use on cuts is solid iodine dissolved in alcohol. Iodine is produced during the refining of the nitrate. We call the iodine a *by-product* of the nitrate industry.

Value of the nitrate. Long ago the early Spaniards attempted to use the Chilean nitrate in making black gunpowder, but the nitrate made the powder damp. Later it was discovered that nitrate was good for fertilizer, and the value of nitrate increased. Later still, ways were found to use it in making *nitro-glycerin*, a highly explosive liquid used in dy-

namite, smokeless gunpowder, and even medicine. The demand for the by-product, iodine, also increased.

Before World War I Chile set a high price on nitrate because it was in great demand. People had to pay the price asked, and the country grew rich from the export of nitrate. Then during World War I, men found ways of making nitrate from air by use of electric power. Chile's nitrate was no longer in so great demand, and the price of it dropped. Today not nearly so much nitrate is exported, but the owners of the nitrate fields still make enough money from nitrate to keep the fields producing. These owners are mostly British and American.

Port cities. In many places along the steep, rocky coast of northern Chile the Coast Range rises directly from the water's edge. Occasionally one sees a shelf of land to which a city clings, looking as if it might lose its hold and fall into the ocean at any moment. Not all of these ports are small. Antofagasta has a population of fifty thousand, and Iquique is almost as large. Yet all these cities must import their food and building supplies. They must obtain their water through long pipe lines from the Andes. From these ports are shipped not only Chile's nitrate but also some of its other minerals.

Other mineral resources. In northern Chile are thick layers of nearly pure salt. The northern Chilean Andes do not supply all of Chile's copper, but they contain large deposits. Copper is the chief export of Chile, and nitrate with its by-product, iodine, comes second.

Someday, if the nitrate deposits should be used up, the people who work in the mines will have to seek their living elsewhere. Most of the ports in northern



Chile will have to be abandoned too. If the time comes when nitrate no longer brings a good price, the settlements will be abandoned even though plenty of ore may remain.

MIDDLE CHILE

On the map on page 121 look again at the Central Valley lying between the Andes on the east and the Coast Range on the west. In the northern part of this valley the land is usually good wherever it is irrigated; in the southern part the land is good after it has been drained. As we go south the Andes are lower than in the north, and the Central Valley is also lower.

The Aconcagua Valley. This map shows you the beautiful and productive Aconcagua Valley, which has good soil and plenty of water for irrigation. Notice where the R o Aconcagua comes out of the mountains. Here it flows more slowly and deposits sediment in a great allu-

vial fan spread out in front of the mountain canyon. High up in the valley where the river rushes out of the mountains, the air is cool because of the high altitude. Frosts often occur in the winter months of June and July. Peaches, plums, pears, and apples are grown here. In the lower and middle Aconcagua Valley frosts seldom occur. Here lemons, oranges, figs, and avocados can be raised. All through the Aconcagua Valley are fine vineyards, vegetable gardens, and large fields of wheat, barley, and alfalfa.

Haciendas. Until recently there were a hundred or more large haciendas in this valley. Some had a thousand acres of irrigated farm land and many thousand acres of mountain land used as pastures. Some of these haciendas still remain today. On such a hacienda you would see the master's house, called in Chile the *casa de hacienda*, standing perhaps in the midst of gardens where flowers, fruit, and different kinds of trees grow. The hacienda also has many farm



buildings, dairy barns, corrals, sheep pens, and stables for cattle and horses. Several large buildings are *wine cellars*, which have deep basements for storing wine in great wooden barrels. An *inquilino* who understands the making and care of wine is in charge of the wine cellars. The houses in which the *inquilinos* live stand close together in rows, perhaps as many as fifty houses forming a square. They are often mere huts.

Inquilinos and rotos. In recent years many *inquilinos* became dissatisfied with their long hours of hard work for low pay. Some went to work in the mines of Chile, first in the nitrate mines and later in the copper and coal mines. Some went across the Andes to live in Argentina. A large number went southward into the forests of Chile to build pioneer homes. But most important of all, many *inquilinos* went to the manufacturing cities of Chile to work in the new industries growing up there. These hired laborers are called *rotos*.

Thus, the old hacienda system is passing away in Chile, as it has already passed away in México. Today you would still see large haciendas in the Aconcagua Valley, but you would also see many small and medium-sized independent farms. On these the farmer has enough land to grow food for his family and perhaps a surplus to sell in near-by city markets. Many of these farmers are poor, but they obtain a better living than the *inquilinos*.

The irrigation system. All through the Aconcagua Valley are fields of grain and excellent alfalfa pastures extending to the river. This small river is fed by the snow on the mountain. In the spring the melting snow fills the rivers that flow across the Central Valley to the sea. The landowners have built their own canals to bring water from the near-by rivers to the farms and haciendas. During the dry season, from January to March, when it is summer in Chile, the rivers always supply enough water for irrigation.

View of the valley. By climbing to the top of a long ridge you could look over the entire Aconcagua Valley. You would see orchards and cultivated fields extending toward the sea. Here and there are small towns with low adobe buildings. Far down in the valley the river becomes smaller because irrigation canals have carried off much of the water. Canals lie at several levels along the foot of the hills on both sides of the valley. Above the canals the hills are dry and brown from lack of water and are not cultivated. But below the canals all is fresh and green. Of what region in our own country does this description remind you? To the east are the Andes, their snow-covered tops reaching high

into the sky. Although the snow on the lower slopes melts in October and November, it remains on the high slopes throughout the year. These high mountains are wasteland with no inhabitants. The lower slopes are covered with dry brush and bunch grass, and the higher Chilean Andes are steep ridges of rock, bare or covered with snow and ice.

Grazing, an important industry. One would expect that in the Central Valley, with its good soil, most of the land would be used for food crops. Most of it is used either for pasturing grazing animals or for the production of feed crops such as clover, alfalfa, and oats. During the summer, herds of cattle and horses graze in the upland meadows of the Andes. In winter they are brought down to the valleys to feed on the crops raised for them during the summer.

Food crops. The chief food crop raised is wheat. Much corn is also grown. Beans, peas, and potatoes are raised in smaller quantities.

In the northern part of the Central Valley almost every kind of fruit grows well. The weather is never too hot or

too cold; there is plenty of sunshine and water for irrigation. More grapes are grown than any other kind of fruit. They are of many different kinds, chiefly large grapes growing in large bunches. Some are used to make raisins, but most of them are made into wine.

The city people. In the cities is a large middle class of people who carry on industry and business. There are also artists, doctors, lawyers, writers, and others. These people do not as a rule belong to either of the two classes of people—the very wealthy landowners or the very poor laborers—who have long made up the population of the farming areas.

Along with the middle class in the cities are many *rotos* who are very poor. *Rotos* in the mines and cities of Chile get very low wages, but they consider themselves better off than they were as *inquilinos*. A *roto* is his own master. In the city he can send his children to better schools. He is free to travel where he wants to and to change employers at any time. Lately the *inquilinos* have been moving to the cities in larger and larger numbers. But they find it difficult to

EWING GALLOWAY

Some farmers in Chile still use primitive methods. The two oxen are pulling a homemade wooden plow.



pay for food, clothing, and shelter with their low wages, and they can live only in sections of the cities where living conditions are poor. Employers in the city are free to dismiss their employees without any good reason, and when the *roto* is out of work, he cannot support himself.

A time of change. The poor people have long tried to obtain a better living by seeking higher wages or tilling small farms of their own. Often the wealthy owners of haciendas or mines have attempted to stop these changes because they cared more for their own large incomes than for the welfare of their countrymen. But today educated Chileans in both government and industry have begun to realize that by helping the poor people to obtain a better living they help all the people in the country. These people are helping farmers to own their farms. They are also helping the city *rotos* to obtain more of the necessities of life and more of the things that help to make life easy and comfortable. They are doing this by building industries in which the *rotos* can work and earn money.

Santiago. The most important industrial city is Santiago, the capital of Chile. It was founded by the Spaniards more than four hundred years ago and has been the center of government ever since. Find it on the map on page 121 in the northern part of the Central Valley. Santiago was the first city in Chile to become industrial. During World War I and especially World War II Chile could not obtain many of the manufactured articles that it had been importing. Many of the factories in the foreign countries with which it had traded were being used to produce war supplies and ships to transport these

supplies. Therefore, to meet the needs of the Chileans, factories were built in Santiago and also in Valparaíso, Concepción, and Valdivia.

Today in Santiago are flour mills, *breweries* for making beer, *wineries* for making wine, sugar refineries, leather tanneries, and factories making shoes and many other articles. Most of the raw materials come from within the country, and the factories are run by electric power. Chile for the size of its population does not use as much electric power as the United States, but it uses more than any other Latin American country. The products of Chile's factories are sold almost entirely to the people of Chile.

Santiago is the fourth largest city in South America. Even though it is the manufacturing center of the country, the amount of manufacturing done is not yet great. Like other South American countries, Chile continues to import much of its manufactured goods.

Santiago is the center of the railroad system of Chile and has regular airway service to Buenos Aires, capital of Argentina, and to cities in the north.

Valparaíso. The chief port and second largest city of Chile, Valparaíso, also contains some of Chile's new manufacturing industries. The city is built on the steep slopes of the Coast Range and has several levels, which are reached by street elevators. The first level, which is on the water front, is the business district. On the next level are the better homes of the city. On the third level, far up the hillsides, is the section where most of the *rotos* live.

Valparaíso is over a hundred miles northwest of Santiago. It is near the mouth of the Río Aconcagua and serves as an important shipping center for the



FISHER FROM CUSHING

Valparaíso is located on the western slopes of the Coast Range and built on several different levels. In the picture is an elevator on which people travel up and down between levels.

Central Valley. This port is the largest on the west coast of South America. A breakwater, built at great cost, gives the bay protection from storm winds from the north, making it possible for ships to dock safely. Elsewhere along the coast of Chile the winds during a storm make it very hard to load and unload freight and passengers.

Other cities. Two other cities, Concepción and Valdivia, also have important manufacturing industries, particularly leather tanneries and shoe factories. Most of the furniture factories, which use the near-by supplies of wood, are located in Valdivia.

Chile's steel industry. The second largest steel mill in Latin America is being built on the Río Bío-Bío, just downstream from Concepción. (The largest steel mill is in the largest country, Brazil.) Com-

pared with those in our city of Pittsburgh, both of these steel mills seem small. Automobiles, farm machines, railroads, great skyscrapers needing steel framework, and other things made of steel are not common in Latin America as in the United States. This single Chilean steel mill will supply all the steel that Chile needs; none will have to be imported.

A steel industry has to have iron ore from which to make the steel, and coal and limestone with which to smelt the ore. Where will these be obtained? Iron ore is brought by steamers from iron mines in the southern part of the Atacama just north of Coquimbo. Coal comes from mines that run out under the ocean from the peninsula at Lebu, just south of Concepción. Limestone is harder to obtain. For it the mill owners must go



JAMES SAWDERS—COMBINE

In southern Chile many of the wooden farmhouses are similar to German farmhouses. The farmers raise livestock for their living.

about nine hundred miles to quarries on a very rainy, windy, cloudy island in southern Chile.

This new steel mill is bringing factory workers to the surrounding area. A new town is growing up around the mill. The Chilean government is already building homes for the people of the town.

The southern valley. As you know, farther south the Central Valley has heavy rainfall. It has long been covered with dense growths of forest. In some places the forest is so thick and so wet that it cannot be destroyed even by burning.

Only within the last hundred years have settlers dared to brave the hardships of clearing these forested lands. The first pioneers, chiefly Germans, worked hard to build good roads and lay out farms. Immigrants also came from Spain, France, Italy, and other European countries. Then great numbers of settlers from farther north in Chile began to flock into this region. Most of them were *inquilinos* who were not satisfied with the *hacienda* system.

Medium-sized farms. The southern

part of the valley is a region of medium-sized farms. Instead of whitewashed adobe buildings with tile roofs we see frame houses with shingle roofs. Instead of neat, walled fields, the landscape is dotted with stumps, and the fields are fenced in with rail fences. This is a pioneer land only recently cleared of forests.

These farms are used mostly to raise livestock. Nearly two fifths of all the cattle in Chile are raised in this region. The cool, moist climate makes the grassy land south of Concepción a region good for dairying. But little dairying is found here because Chileans are not fond of dairy products.

Less than a fifth of the land is used for food crops. The chief crop is wheat, which grows well in the cool, damp climate. Other crops are potatoes, apples, oats, and hay.

Although this region has a wealth of forests, little lumbering goes on. Instead trees are being cut down so that the land may be used for farming or grazing.

A resort country. The southern valley region is becoming important as a

vacation land. Between the cities of Temuco and Puerto Montt is some of the most beautiful lake and mountain scenery in South America; immense, forest-covered mountains with high, rocky peaks rise above beautiful valleys. North of Puerto Montt is Lake Llanquihue, the second largest lake in South America.

SOUTHERN CHILE

The southern third of Chile extends all the way to Cape Horn. Along this unpleasant southern coast are found some of the most primitive Indians in the world. Altogether they number not more than a thousand, and they are growing fewer every year. Most of them live by hunting; a few live chiefly on shellfish and spend much of their time in their canoes among the fiords.

On the eastern side of the Andes near the Strait of Magellan is a small section of land where the climate is more comfortable. Find this section on the map on page 117. Being on the eastern side, the land is protected by the mountains from the strong winds and heavy rains on the western side. In this section, over a

thousand miles by boat from the Central Valley, about 30,000 people of European descent have settled, chiefly on level grassland.

Sheep ranches. The chief means of making a living in southern Chile is by herding sheep. Huge sheep ranches, some containing over a hundred thousand acres, stretch across the grasslands north of Punta Arenas. Since the climate is cool the year round, the sheep grow fine, thick wool. The herders, mostly men who have not married, live in barracks-like buildings, although some ranches have one-family houses. Few men want to bring their families to live in such a cold, barren land.

Punta Arenas. The chief trading center for the region is the modern city of Punta Arenas. Each year millions of dollars' worth of wool and frozen meats are shipped from here.

AN INDUSTRIAL COUNTRY

You should remember Chile as a narrow country stretching a great distance along the Pacific coast of South America. It is a country of many different climates.

EWING GALLOWAY

Near Punta Arenas. The milkman sells milk from tin pails. The wooden cart is an important vehicle in all the towns of this area.



Most of Chile's wealth has come from minerals, especially from copper, nitrate, and iodine. Chile is the leading exporter of iron ore and the leading producer of coal in South America. Many workers labor in the iron mines north of Coquimbo and in the coal mines at the town of Lebu. In recent years copper has become Chile's most important export. Large copper mines in the Andes employ thousands of workers. But only a small part of the population is employed in the mines.

Today more than a fifth of the Chilean workers are employed in manufacturing industries. Chile is becoming a very modern country, not at all like Bolivia, Peru, and Ecuador. Out of all Latin America, only Argentina and Brazil have more industries than Chile; for the size of its population, Chile is more industrial than even Brazil. Chile has up-to-date

railroads with clean, comfortable cars that run smoothly and on time.

The government of Chile is encouraging the development of new industries, and helping the old ones to pay better wages. As more of the people are paid good wages, more will be able to buy factory products. The factories will have more work to do and will need more workers. Once factories are started, the people become better and better off. The owners of large haciendas, which for hundreds of years kept most of the people poor, have lost much of their power in the country, and the factory owners and businessmen are becoming more and more important. They, too, run their businesses for their own profit. But because they are employing more and more people for better wages, they are rapidly helping all the people of Chile to obtain a better living.

A trainload of copper ore in the Chilean desert. In the tall building the ore is crushed and the sand and gravel are washed out of the ore before it is sent to the smelter.

JAMES SAWDERS—COMBINE



Thinking For Yourself

In this chapter you have read about Chile's three strips of land running north and south. Tell how each strip differs from the others. Describe the three chief climates of Chile. Why are they so different? Tell what you think the weather might be like on July 15th at Coquimbo, at Santiago, or at Cape Horn.

WRITING WORD PICTURES

1. Write a paragraph describing life on a Chilean hacienda. Include answers to the following questions: Why did the *inquilinos* remain on the land? How did the way the patron lived differ from the way the *inquilinos* lived? If you owned a hacienda in the Aconcagua Valley, what crops would you raise? Which would you sell?

2. Write a description of how sodium nitrate is obtained from the Atacama. Name an important by-product of nitrate.

TOPICS TO TALK ABOUT AND EXPLAIN

1. As Chile slowly changes from a farming to an industrial country, ways of living are being changed and improved. Why is the hacienda system dying out?

2. Would you prefer the life of a *roto* or the life of an *inquilino*? Why?

3. Explain what is meant by *the middle class*. Where does the majority of the middle class in Chile live?

4. In what way did world events contribute to the development of Santiago and other cities as industrial centers?

5. Although the grassy land south of Concepción is good for dairying, little dairying is carried on there. Why?

6. Why is southern Chile suited to sheep herding?

7. Why was Chile able at one time to set a high price on its nitrate? Who shares in the profits from the sale of nitrate?

8. Why might a settlement around the nitrate mines be abandoned even though plenty of ore remains?

READING MAPS

1. On the map on pages 116–117, what direction is toward the top of the pages? What direction is usually at the top of the page on maps? Why do you think this map was placed in this position?

2. Chile is bordered on all sides by natural barriers. On the map on pages 116–117, locate the barriers and tell what they are. Across how many degrees of latitude does Chile extend? Does Chile have many good harbors? Are there many seaports?

3. Turn to the population map on page 11. Where do most of the people live? How densely populated is the Atacama? How important is this region?

4. Show a part of Chile where you might see:

an industrial city

large haciendas

an irrigation system

government buildings

summer resorts

sheep ranches

dense forests

a nitrate field

a desert

several lakes



MOORE-MCCORMACK LINES

This gaucho on the Humid Pampa is about to rope a young steer. Water is pumped by windmill into troughs so that the cattle will not lose weight searching for water.

Argentina

Argentina is quite different from any of the Latin American countries we have studied thus far. Nearly all its people are white people, and at least a third of them live in the cities. Buenos Aires, the capital of Argentina, is the largest city in the southern hemisphere. Also, the people of Argentina have a better living than those of any other South American country except Uruguay.

Among the countries of the world, Argentina is a leading producer of wheat

and meat. The Argentine people use much more meat per person than we do. The country carries on a large foreign trade, exporting particularly grain and meat products. Because of the great quantities of goods imported, its people are well supplied with things which they do not produce for themselves.

Regions and resources. This modern, prosperous country is the second largest in South America. It reaches from the Atlantic Ocean westward into

the Andes and extends through almost as many degrees of latitude as Chile does. Thus it includes very different regions. In northern Argentina are hot, humid plains and hills, and to the west are high mountains. In the south are dry, windy plateaus, on which great numbers of sheep are raised. In central and eastern Argentina are vast level plains, some dry, some humid. The humid eastern plain, called the Humid Pampa, is one of the most productive farming regions in the world.

These very different regions of Argentina have a variety of natural resources. However, most of the raw materials come from farms and ranches rather than from mines. Argentina lacks mineral resources, especially coal and oil. It also lacks water power near its cities, with which to run factory machines.

A modern country with growing industries. You might not expect that a country lacking in fuels and water power could develop large manufacturing industries. Yet, with the exception of Brazil, Argentina has more factories than any other country in Latin America. Each year, more and more of the manufactured products used in Argentina are produced there. How has Argentina been able to develop its great industries?

Argentina depends on foreign trade more than do most modern countries. By world trade it obtains fuels, metals, and heavy machinery, paying for them with exports of farm products. In fact, it is one of the great trading nations of the world.

Changes in the use of the land. In any region the use of the land depends partly on the skills of its people and on what they want to do. Two regions in the world much alike in surface and

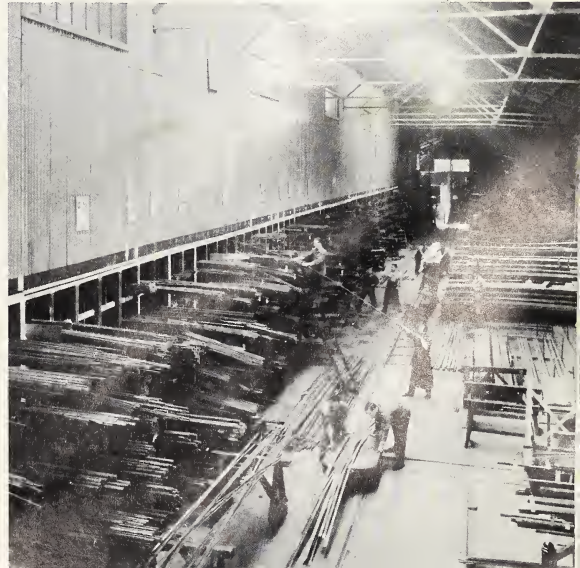
climate may be used in very different ways. For example, primitive people, who know only a few ways of making their living from the land, may use a region for subsistence hunting or farming. Other people may use a similar region for commercial farms. They may build great cities. In factories they may make countless useful articles from many different kinds of raw materials, gathered from all the earth.

The use of the land in any one region may be entirely changed in a very short time by the coming of new settlers or by new ideas learned by the people already there. In some parts of Latin America changes in the use of the land have occurred several times. Since the Spaniards first landed in Argentina, three great changes have taken place in the use of the Humid Pampa, and the last of these is still going on.

As you read this chapter, watch for these changes and try to understand why they have come about. What has world trade to do with the prosperity of Argentina?

Steel imported for Argentine industry is stored in large warehouses until it is used.

PHILIP GENDREAU, N.Y.



Learning about Argentina from the Map

Turn to the map of South America on pages 56-57 and find Argentina. In what part of the continent does the country lie? Notice that the larger part of Argentina is in the southern middle latitudes. Northern Argentina is in the low latitudes, with only a very small section in the tropics. On your classroom globe show that Argentina extends much farther south than the United States extends north. Yet Argentina has no severe winters in its higher latitudes. Why? (If you cannot answer, turn to page 59.)

Argentina is by far the largest of the South American countries that were settled by Spanish colonists. Brazil, you remember, was occupied chiefly by Portuguese colonists. Argentina is about a third as large as the United States.

The Humid Pampa. On this map notice where the railroad lines of Argentina run closest together. At what city do many railroad lines meet? This city is one of the great ports of the world. All other parts of Argentina look toward Buenos Aires as the center of the national life and as a market for their products.

What kind of land is this area where so many railroads meet? The eastern part of this plain is called the Humid Pampa. *Pampa* means "plain," and the Humid Pampa is the part of the plain which receives enough rainfall to escape frequent drouths.

The dry west. The western section of the plain is called the Dry Pampa. This large country reaches far beyond the Humid Pampa into several outlying regions. To the west is dry country, consisting of desert plains and ranges of

mountains among which are many mountain basins. This basin region is much like the Great Basin in western United States. We call the area at the foot of the mountains the *piedmont*, a word which means "at the foot of the mountains."

The Gran Chaco. North of the Humid Pampa are hot, wet plains called the Gran Chaco, which extend into Bolivia and Paraguay. The Chaco is covered with tropical scrub forest and grassland mixed. Along the rivers are strips of dense forest. The entire region is thinly inhabited.

The Northeast. To the north locate the gently rolling plains that lie between the Paraná and Uruguay Rivers. Find also the small arm of Argentine territory that extends onto the Paraná Plateau. In what country is most of this plateau?

Patagonia. South of the Río Colorado is the cool, dry, windy plateau of Patagonia. Notice (page 57) that it includes the tip of South America. What is this southern end of the continent named? What is the name of the city located farthest south? No city in the world is closer than Ushuaia to the south pole. Most of Patagonia is sparsely settled.

The Andes. All along the western border of Argentina rise the high ranges of the Andes. These are dry in the north where Argentina borders Bolivia and northern Chile. In the south the Andes are rainy, with glaciers on the high, cold slopes and forests on lower slopes. Find this rainy part along the boundary which Argentina shares with southern



ARGENTINA, 23° S. TO 44° S.

Cities

- **BUENOS AIRES**.....Over 1,000,000
- **Rosario**.....500,000 to 1,000,000
- **Mendoza**.....100,000 to 500,000
- **Corrientes**.....50,000 to 100,000
- **Mar del Plata**.....Under 50,000
- ☆ **Capital**

- Principal Railroads
- Principal Highways

- Plains
- Mountain Basins
- Plateaus
- Hills and Low Mountains
- High Mountains

Scale of Miles
0 144 288
One inch stands for 144 miles



forests and grasslands of the Chaco; (4) the windy plateau of Patagonia; and (5) the most important region of all, the Humid Pampa with its great city of Buenos Aires.

THE NORTHWEST

Northwest Argentina includes the Argentine Andes and the dry country just east of the Andes and north of the Río Colorado. Find the Northwest on this map. Most of the people of this region live in the oases along the Andean piedmont.

Lack of rainfall. This is an arid region. Locate the city of Tucumán in the Northwest. North of Tucumán, crops are grown in some areas without irrigation but there are also many irrigated fields. Corn and sugar cane are the chief crops grown. South of Tucumán, so little rain falls that no crops can be raised without irrigation. Here, irrigated alfalfa, grown for livestock, is the chief crop, rather than corn, but there are also many irrigated vineyards.

Need for irrigation. In the Northwest, desert oases are found wherever streams from the high snow fields of the Andes flow down onto the eastern piedmont. Where there is little or no water, the land is dry and brown and no crops can be raised. Where water can be found for irrigation, settlers have dug canals, laid out farms, and made the desert land productive.

Growth of Tucumán. The city of Tucumán is the largest city in the Northwest. It is one of many cities in the world that have become commercial and industrial cities because they have been located where routes of travel meet. The location of Tucumán has many ad-

Chile. Locate one place where this boundary reaches east of the Andes onto the plain. In which country is the Strait of Magellan?

Five regions. In this chapter you will read about each of the five regions of Argentina. They are (1) the dry Northwest with its high mountains and its dry, sunny piedmont where irrigation water comes from snow-capped summits; (2) the Northeast with its warm grasslands and forested valleys; (3) the hot, wet

vantages. In colonial days it was a trading post on a main route of travel between the Argentine plains and the mining settlements of Bolivia and Perú. Mules were needed as pack animals in these high mining centers, but they could not be raised in the bleak mountain regions. They were brought from the humid grassy plains, chiefly those between the towns of Rosario and Santa Fé. This part of the Humid Pampa was nearest to the trading post. If the mules were raised around Rosario, why do you suppose they were brought first to Tucumán on the way to the high mining centers of the Andes? Why didn't they travel more directly toward Potosí? Use the map on page 133 to find the answers to these questions. Remember that mules must have drinking water as they travel across the dry Northwest.

The mule was the only animal which the Europeans had that could transport goods over the rugged mountain trails of the high Andes. Therefore, goods transported across the plains in wagons were transferred at Tucumán to mule trains before crossing the mountains. Teamsters traveling from the mountains stopped at Tucumán to buy supplies, harnesses for their animals, or wagons in which to cross the plains. Tucumán soon became the center through which almost all of the colonial trade of the region passed. As trade increased, wagon manufacturing, harness making, the milling of wheat, and other industries gradually were undertaken in the city.

Farming near Tucumán. After colonial times the region around Tucumán became important for a quite different reason, the growing of sugar cane. This, also, was due to the advantages of the location. It is the most southern

point in Argentina that has hot enough weather for sugar cane. South of Tucumán the frosts are too severe for this tropical crop. Also, Tucumán with the surrounding region has more rainfall than other parts of the Northwest. If you can find the location of Tucumán on the rainfall map, page 61, you will see a small area with greater rainfall than the surrounding land. Here rains come often during the warmer months. The rainfall is thirty-seven inches a year, enough for agriculture without irrigation. However, the farmers provide for irrigation because drouths sometimes occur. Plenty of irrigation water can be obtained from several streams that flow down from a high range of the Andes.

A sugar oasis. Four fifths of the sugar produced in Argentina comes from Tucumán. Since sugar cane is grown on more than half of the farm land of this region, many laborers are needed to plant and harvest it. Some laborers work on large plantations, but there are also many small farms that are rented or

Sugar plantation in Argentina. A huge crane loads the sugar cane onto a truck.

THREE LIONS





BURTON HOLMES FROM EWING GALLOWAY

Grape harvesting near Mendoza. Narrow irrigation ditches run between rows of vines. Explain from where this water comes.

owned by the growers. The Tucumán region is one of the most densely populated parts of Argentina.

The cane is cut in the fields and brought to the mills in wagons drawn by oxen or mules. After the raw sugar comes from the mills, part of it goes to sugar refineries in Tucumán. The rest is sent southeast by railway to refineries in the cities of Rosario and Buenos Aires. Tucumán is nearer to these refineries than are the other sugar oases. Thus it has always had the advantages of transporting its raw sugar at less cost.

Vineyard oases. At the foot of the mountains south of Tucumán are dry plains where crops cannot be raised unless the land is irrigated. Notice on the rainfall map, page 61, that the great dry belt of South America extends gradually toward the east until at about 93°S it reaches the east coast.

On the map on page 133 locate the city of Mendoza, southwest of Tucumán at the foot of the Andes. Here the hot deserts of the north begin to change to the cool deserts of Patagonia. The region

in which Mendoza is located is one of the desert oases. Every year millions of pounds of grapes are gathered from its vineyards. About a hundred miles south of Mendoza lies the oasis of San Rafael, irrigated by two mountain streams. San Rafael is noted for its pears. About a hundred miles north of Mendoza is the oasis of San Juan near another stream. Like Mendoza, San Juan produces grapes. Two small oases lie north of San Juan. These grow grapes, alfalfa, and many different crops that are sold to miners in the neighboring Andes. Most of the alfalfa is fed to cattle, which provide meat for the people of the oases and the mining communities. Some is fed to animals being driven over the mountains into Chile.

These oases are much alike. All depend on mountain streams for water. All have vineyards, fruit orchards, and fields of green alfalfa. Tall, slender poplars line the roads and separate the fields. The land around the oases, which is not irrigated, is brown desert. The weather is generally clear and sunny.

Mendoza. You should understand how the irrigated area around Mendoza obtains the water to keep its vineyards green. From the bare, rocky slopes of the high Andes above the town a foaming, roaring torrent, the Río Mendoza, rushes down into the basin. A short distance to the south is another stream, which also supplies water for irrigating nearly a million acres of land. A dam has been built across the Río Mendoza to hold back the water that pours down through the rocky canyons and gorges. From a main canal the water flows into smaller canals. From these it is drawn off into little ditches or furrows in vineyards, orchards, and gardens. Straight rows of grapevines, some growing on trellises and others on wires, are planted along the narrow irrigation ditches. The water left in the rivers flows southward into shallow lakes and marshes. In time of flood the water may continue southward to drain into the Río Colorado.

Farmers of Mendoza. Most of the vineyard owners are of either Italian or Spanish descent. (As you will learn later in this book, immigrants from Spain

or Italy are usually skilled in growing grapes and making them into wine.) The *villa*, or house in which the owner lives, is usually a low, one-story building with white-washed adobe walls and a red-tiled roof. Near the villa are small patches of corn; and sometimes vegetables for the family's use are planted among the grapevines. In that way no precious growing space is wasted. A few fruit trees may also be planted, but never where they would shade the grapevines.

The vineyard is laid out in long, neat rows. The owner keeps the soil well fertilized and cultivated. After the grapes have been harvested, he prunes the vines, cutting off the long runners on which grapes have grown. The next spring, new vines grow from each old stem. These are tied to wires and posts so that the growing grapes will get as much sunshine as possible. The vines are also sprayed at certain times to protect them from plant diseases. During the latter part of the growing season a vineyard is irrigated every two weeks.

For a short period at harvest time an owner may have to employ laborers to

BURTON HOLMES FROM EWING GALLOWAY

Wooden carts wait to be loaded with baskets of grapes, which will be taken to a winery. The vineyard owner's villa is on the left.



help him. The huge bunches of grapes are cut off and put into baskets. They are then taken to a *winepress*, a machine which presses the juice out of grapes.

A wine bodega. The owner of a large vineyard may have his own winepress. Farmers who do not own one usually sell their grapes to a wine *bodega* as soon as they are gathered. A bodega is a winery. In some bodegas as many as a million gallons of wine are made each year.

At harvest time great truckloads of the fruit may be seen on the way to the bodegas. High carts filled with casks of wine are driven to the railway station. These casks are transported across the pampas to markets in Buenos Aires.

The city of Mendoza. In the midst of these miles and miles of vineyards, fruit orchards, and alfalfa fields is the city of Mendoza. Like Tucumán it is the trading and manufacturing center for the oasis community. Flour, wagons, and building supplies are manufactured in Mendoza.

Because of the danger of earthquakes, all the houses in Mendoza are low, one-story buildings. The frequent quakes are usually light ones, but about a hundred years ago a very severe quake shook the town. At that time the earth trembled so violently that not a building in the whole city was left standing.

The ruins of old Mendoza were replaced by a modern city of wide streets, low houses, large squares, and beautiful parks. Many of the streets are lined with rows of poplars or cottonwood trees. Tourists who visit this fertile oasis enjoy the clear, pleasant weather. Many travelers stop here before crossing the Andes into Chile. Indeed, Mendoza is a famous old pass city. To the west is the

Uspallata Pass which, on the Chile side, leads into the valley of Aconcagua and Valparaíso. For hundreds of years this pass has been the main route across the southern Andes.

THE NORTHEAST

The country between the Paraná and Uruguay rivers is very different from northwestern Argentina with its mountains and piedmont oases. The Northeast is a land of much rain and of forests and rolling grassy plains. The summers are hot and rainy and the winters mild. The southern part of this region is somewhat drier than the north, and the soil is well drained except in the swampy valleys. The southeastern part is a leading sheep district. The animals are raised for wool, which is exported.

Linseed oil. In the southern part, flax has become an important crop. The seeds of the flax, called *linseed*, are third in importance among Argentine exports. They are pressed to obtain linseed oil. This is used in manufacturing paints, oilcloth, and linoleum. The cake left after the oil has been pressed out of the seeds is fed to livestock.

Territory of Misiones. The long finger of Argentine land pointing toward Brazil is known as the territory of Misiones. Perhaps Misiones is best known to the rest of the world for the Iguassú Falls, which are visited by many tourists. In the Indian language Iguassú means "great waters." These falls, on the border of Brazil and Argentina, are on the Rio Iguassú, which has its source in Brazil near the east coast. They are much higher than Niagara Falls, but unlike Niagara the Iguassú Falls are far from any large center of population. Find on the population map, page 11,



JAMES SAWDERS—COMBINE

Electric power cannot be transported a great distance. It is unfortunate, therefore, that Iguassú Falls is so far from any large population centers where electric power is needed.

the location of the falls (at the northern tip of Misiones). No electric power generated there could reach cities where it is needed.

Many small farms along the Brazilian border raise food crops for the use of the farmers and their families. There are many valuable trees in Misiones, but they have been little used.

Yerba maté. In Misiones much *yerba maté* is produced on plantations. Yerba maté, often called Paraguay tea, is widely used instead of tea or coffee in Argentina, Uruguay, Paraguay, and southern Brazil. It is made from the leaves and young shoots of a kind of holly tree. These are gathered, dried, and crushed. Some yerba maté is exported to other South American countries. Small

quantities go from Argentina to the United States, where yerba maté can be bought in a few grocery stores.

THE GRAN CHACO

On the map of South America, page 57, locate the Gran Chaco. The Argentine part lies between the Paraguay-Paraná River and the piedmont settlements in the northwest. Gran Chaco means "great hunting ground." At one time the Chaco was the hunting ground of roving bands of warlike Indians.

Lying on the margin of the tropics, the Chaco is hot in summer. In fact some of the hottest weather of which we have record in South America has occurred here. Remember that summer comes in Argentina during our winter.

During the summer rains, floods spread over large areas of the Chaco, particularly areas near the Paraguay-Paraná River. On the western side, near the mountains, the land is so dry that water is not easy to find. Especially during the dry season, in winter, crops must be irrigated.

Quebracho forests. Much of the world's supply of *quebracho* comes from the Chaco, chiefly the eastern part. *Quebracho* means "break-ax." The quebracho tree has wood so hard that logs cut and left lying on the damp ground for twenty-five years have been found to be sound. The tree has bright green foliage and stands about twenty-five feet high. It grows slowly, taking a hundred years to reach its full growth.

There are two kinds of quebracho trees, one containing much more *tannin* than the other. Tannin is used for tanning hides to make leather. There is no

Quebracho logs are taken by a truck to a river and floated downstream to a mill.

MAYER FROM MONKMEYER



other forest of quebracho in the world from which tannin can be so easily obtained. The quebracho with less tannin is used mainly for its wood, which makes good telephone poles, fence posts, and firewood.

One of the main problems of the quebracho industry is the transportation of the logs to the mill where the heartwood of the logs is boiled to get tannin. Since the mills require a large amount of water, they must be located near the Paraná River or its branches not too distant from the forests. Railroads are used to ship the logs to the mills. Oxen drag the logs to the railroads. Therefore, quebracho logging is a paying industry only in an area within ten miles of a railroad.

Cotton plantations. The Chaco is a natural cotton region with good soil and climate for raising cotton. During the last twenty-five years the Argentine government has encouraged immigrant farmers from Europe to plant small cotton farms in the Chaco. On the map on page 133 find the two most northern railroads in the Argentine Chaco that run northwestward from the Paraguay-Paraná River. It is near these railroads that the small cotton farms have been started on government land. The government has lent the farmers money and furnished them with free seed. It has sent experts to advise the farmers on how to plant, cultivate, and harvest their cotton.

The pioneer settlers have not obtained large yields of cotton. This is perhaps due to the fact that they had no experience in growing the crop. One of the greatest disadvantages has been that they did not know how to fight the insect pests that attack the cotton plant.

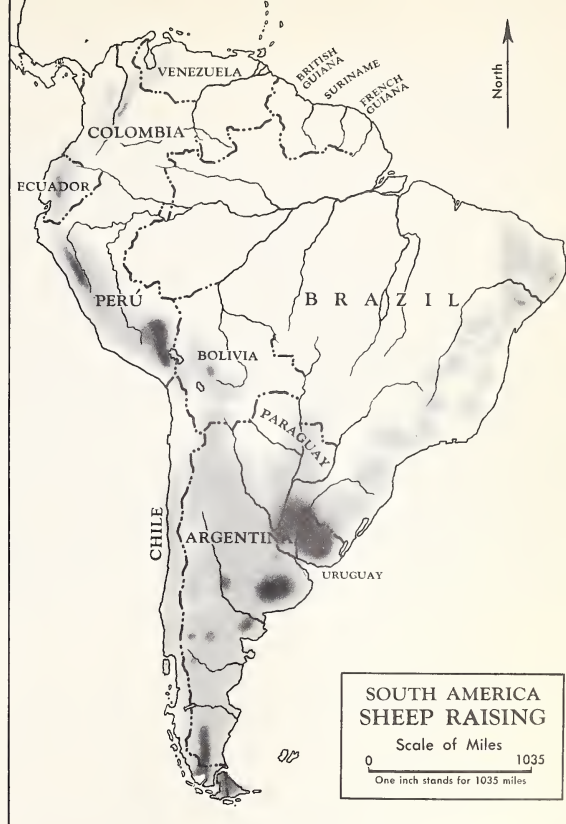
Locusts. A deadly enemy of the Chaco farmers is a kind of grasshopper, the locust, which will eat every green plant in sight. Sometimes locusts come in such thick swarms that they darken the sky. Many cotton farmers try to protect their crops with sheets of *galvanized* iron, that is, iron dipped into melted zinc to keep it from rusting. The iron sheets are placed upright near ditches. The locusts flying toward the cotton field strike against the iron sheet and tumble into the ditch, where the farmer destroys them. Even so, locusts do much damage.

In spite of insect pests, however, the Chaco is Argentina's chief cotton-producing region. Today Argentina produces enough cotton even to export a small quantity.

PATAGONIA

As we have seen, the Río Colorado is the northern boundary of Patagonia. Directly north lies the Andean piedmont; to the northeast, the Humid Pampa. Instead of hot, humid forests as in northern Argentina, in the south we find cool, dry, windy plateaus. Patagonia includes more than a fourth of Argentina's territory but only about a hundredth of the population. Most of the people live in the small ports along the coast. The rest are engaged chiefly in raising sheep. The slopes of the Andes are heavily forested, but the timber is little used.

Ranches. Some of the largest sheep ranches in the world, consisting of thousands of square miles, are found in Patagonia. Many were first laid out by British colonists, who had learned in their homeland how to raise sheep. On the ranches in northern Patagonia, sheep are raised almost entirely for their wool;



most of the mutton is produced in the south. In both sections, sheep are much more important than cattle. A few cattle ranches are found in northern Patagonia.

Shearing and dipping the sheep.

The shearing of sheep is usually done in November or December, which are spring months in Patagonia. On most ranches the wool is clipped with electric shears. After a sheep has been sheared, it passes out of the shearing shed into a trough containing a liquid that kills ticks and prevents a disease known as *sheep scab*. The lambs, which of course are not sheared, are dipped too.

Marketing wool. After each spring shearing, the bags of wool are loaded on wagons or motor trucks and taken to the

nearest railway station or port. The little ports along the coast are very busy for a few months at this time of the year. The rest of the year there is little port activity. As fast as the wool is moved to the ports, small steamers carry it to the big wool market at Buenos Aires. From there much of the wool is exported to Europe and North America.

Herding the sheep. A ranch with a couple of thousand sheep is likely to include over thirty thousand acres of land. Perhaps this seems like a very large pasture, even for so many sheep. But much of the range is dry and dusty, with stretches of bare earth between the bunches of grass. Animals have to graze over many acres to get enough feed, which is always scarce, and green only after a rain. Here and there are low bushes that have leaves and berries on which the sheep feed. Water is usually pumped from wells by means of windmills.

The shepherd must see that the sheep do not graze too long in one area or roam too far from water. As on sheep ranches in the United States, dogs are used to round up any sheep that stray and to protect them from wild animals.

In most parts of Patagonia the shepherds must be on the watch for *pumas*, or mountain lions as they are usually called

In Patagonia wool is transported by wagons or railroad to the nearest seaport.

EWING GALLOWAY



in the United States. Some pumas measure nine or ten feet from nose to tail. Sometimes a whole family of pumas will attack a flock of sheep and then they do much damage. Usually when a puma kills a sheep, it does not eat all of its prey at one meal but returns the next day for another meal. Sheep men, knowing this, lie in wait to shoot the animal.

In winter the snow often piles up in drifts that block the roads, and the sheep cannot find grass on the upland. Both men and animals move down into a valley where the cliffs protect them from the rough, cold wind that is always blowing.

Agriculture. Patagonia is so dry that crops cannot be grown without irrigation. In the valleys of a few rivers such as the Río Colorado are irrigated areas. Here alfalfa is the chief crop, though some wheat, rye, and potatoes are also raised.

On the map locate the Río Negro. Water from this river and its branches is used to irrigate small neighboring farms. On these, alfalfa is the chief crop, but grapes and other fruits are also grown. In fact, this is Argentina's chief pear producing district.

Oil fields. Oil of fair quality is also produced in Patagonia. A field at Comodoro Rivadavia supplies the larger part of Argentina's oil production. Some oil is refined near this field, but much of it goes northeast by ocean tanker to refineries in the city of La Plata.

EARLY SETTLEMENT OF THE HUMID PAMPA—THE FIRST CHANGE

The Indians' hunting ground. About four hundred years ago tribes of savage Indians lived in the region we now call the Pampas of Argentina, the



Early Indians hunting with bolas on the Humid Pampa. Notice the bunches of tall grass.

vast level grasslands extending from the Atlantic westward almost to the foot of the Andes. The Indians of the Pampas were nomadic, some of them wandering after game even to the southern end of South America. They traveled on foot, for there were no horses in the Americas before the coming of the Spaniards. For their living they depended chiefly on hunting the wild *guanaco*, a wool-bearing animal related to the llama, and the *rhea*, a bird that resembles an ostrich though it is not so large.

The Indians hunted these wild animals with spears and *bolas*. A bola was made of two or three smooth, round stones tied to the ends of long leather thongs. The other ends of the thongs were tied together. The Indian hunter held one stone and swung the others in a circle above his head. When they were whirling very fast, he let go of the stone in his hand. The bola whizzed through the air and wrapped itself around the legs of the animal.

Few changes in the land. These Indians roamed the Pampas a long time before the coming of the white man. In the west the vegetation became thinner as the climate became more arid toward the Andes. But in the east the hunters could travel for days through the tall prairie grass. Here they saw no other vegetation except in the marshy spots, where coarse rushes rustled in the wind.

The wild hunters followed the animals from one side of the Pampas to the other, living as their ancestors had lived for hundreds of years. They made few changes in the land.

The coming of the Spaniards. In 1516 the Indians of the Pampas saw white men, Spaniards, for the first time. The white men's ideas about land were different from those of the Indians. The Spaniards counted their wealth in terms of the land they owned. They wanted much land and wanted to separate their land from that of the Indians. But the Indians opposed the Spaniards day and



EWING GALLOWAY

A tenant hut on the Humid Pampa. These women are grinding wheat into coarse flour.

night, using their bolas skillfully against the horses of the Spaniards.

The Salado Marshes. As you can see on the map on page 133, there are streams on the edges of the Humid Pampa, but none crosses it. It is covered with deep layers of silt and fine sand. The top layer consists of several feet of *loess*, or wind-blown dust, carried by the wind from the dry plains in the west and south. This layer is without stones or pebbles. The loess is so fine that when you rub it between your fingers, it feels like flour. The rain, instead of draining into rivers, sinks into the ground and seeps through the loose soil to the sea. This is why the low places are marshy.

For more than three hundred years after the Spaniards came to the Pampas, the Indians kept as their hunting ground the vast tract of the Humid Pampa southwest of the Salado Marshes. Find the chain of marshes on the map on page 133.

The white men used the land in the northeast. They built a line of forts along the Salado Marshes to keep the Indians away from the white settlements.

Indian raids. The Indians, hardy and bold fighting men, kept making raids into the country which the white man had taken from them. They attacked the settlements, stole cattle by the thousands, and drove the herds over the Andes, selling them in Chile. Sometimes the Indians raided a creaking caravan as it crossed the Pampas on a well-worn trail.

Many changes in the land. Almost as soon as the Spaniards had settled on the Humid Pampa, they began to make changes in the grasslands. They brought cattle, sheep, and horses from Spain and herded them on the land where before only wild animals had run. From Europe they imported grass seed, which soon sprouted on the Pampas and developed a thick, green sod. The rich European grass extended toward the Salado Marshes but not beyond it. South of the marshes the country has less rainfall. The land becomes drier and even today is spotted with the native bunch grass. In those days a traveler would notice the difference between the thick carpet of grass north of the river and the tall bunch grass of the Indians' hunting ground.

The early estancias. The Spanish government made large grants of land on the Pampas north of the Salado Marshes to settlers whom it favored. The land was thus divided into huge *estancias*, or ranches, consisting of thousands of acres. The owners raised great herds of livestock, which roamed freely over the range until they were rounded up and killed for their hides.

The region was thinly settled, for only a small number of people lived on each of the huge estancias. Cattle, sheep, horses, and goats grazed over the immense plain. Some strayed away or were stolen by Indians or killed by wild animals, but nevertheless, the herds grew larger year by year. As yet no owner branded his livestock.

The gauchos. During colonial times most of the work on the estancias was done by Spanish and mestizo *gauchos*. The gaucho was a rough, daring fellow who rode well and spent much of his time in the saddle. He threw the wild cattle to the ground with a bola instead of a lariat like those used on ranches in our country. He was not frightened by the attacks of scattered tribes of Indians; he fought them savagely with a knife. In his spare time after his work was done, he liked to play a guitar and sing.

The gaucho's chief work was to round up the wild cattle and slaughter them for their hides and tallow. A band of gauchos would surround a herd and each man would *hamstring* as many animals as possible. That is, he would cut a tendon at the back of the hind leg, to keep the animal from running. Then the gauchos would slide quickly off their horses and kill and skin the fallen animals. They would cut off all the meat they wanted and leave the rest to the birds and wild animals. In colonial days there was no way to get meat to a distant market before it spoiled. Some of the skins were sent to Spain or other lands. Many were used on the Pampas for making huts, tents, and sleds.

The Humid Pampa was now the hunting ground of the gaucho. He could have his own horses and cattle if he liked. He built his hut where he chose.

He moved from place to place wherever he found the best grass and water. But he did not plow the land and plant crops. The land provided a living for few people.

Ownership of the land. The Indian hunted over great stretches of land. A tribe would often drive out other tribes that invaded the hunting grounds it was using at the time. But a single Indian never thought of claiming a section of this land for his own, to use as a farm or ranch. However, the Spanish settlers took part of the land from the Indians, divided it into large estancias, and pastured livestock over the broad grasslands. They counted their wealth in terms of thousands of acres of land and thousands of head of livestock. They were not interested in farming. Their chief interest beyond the borders of their own estancias was how to free themselves from Spanish rule.

When Argentina became a free country, it had a scanty population. There

Argentine gauchos carry light materials on which to cook their meals out of doors.

MOORE-McCORMACK LINES



was plenty of open land that the people could use for either grazing or farming, but they were interested almost entirely in horses, cattle, and sheep, and not at all in farming. Also, they were used to having the land divided into large estates owned by a few people.

FARMING ON THE HUMID PAMPA— THE SECOND CHANGE

Building of fences. About a hundred years ago barbed wire was brought to the Pampas. It was used to fence in livestock and thus keep each man's herds separate from those of his neighbors. Wood for fence posts was shipped in from the Chaco, since the Humid Pampa has few trees. The ranchman could now see his fields marked off from all others.

The use of fences had its disadvantages, also. Before the days of fences, people could ride or drive anywhere. After wagons had worn deep ruts in a road, other wagons could follow new paths beside the old. But after the fields were fenced in, roads could not be shifted in this way. During the rains, the fine soil in the wagon tracks turned into deep mud. In dry weather, the wind blew away loose soil in the form of dust. In time the roads were worn several feet below the surface of the plains. Then rain water collected in these ditches, and they could hardly be used as roads. As you know, surface rocks and pebbles are found on the Pampas only around the hills. In the early days there was no way of bringing in the material needed for road building.

Building of railroads. Argentina's problems of travel and transportation were solved for a while by use of the steam engine and the railroad. One day an

engine pulling two coaches puffed out of Buenos Aires into the Pampas. Later, many locomotives and coaches were ordered from England. Railroad lines were built in Argentina by British companies, and British coal was brought in for the engines to burn. Travel became easy, and ease of travel helped to make it cheap. Products could be hauled cheaply to the ports. In areas near the railroad it was no longer necessary to drive cattle more than a few miles. Even though the dirt roads were deep in dust or sloppy with mud, the herds could follow them to the railway.

Settlement south of the marshes. Of course, all this time the white man had been extending his land. He had looked at the Indian hunting ground southwest of the Salado Marshes and had seen that it was a fine natural pasture. In four years of war, he drove the Indians off these lands into Patagonia.

Wells and windmills. As the number of livestock on the Pampas increased, the ranchmen began to need more water for them. The Pampas are so level that, except in the marshes, there are hardly any low places in which water can collect on the surface. Yet the ground water is usually not far below the surface. Therefore wells were dug. In the United States a machine had been invented that could drill deeply for water. These machines were used to drill wells in the drier areas of the Pampas. Shiploads of windmills were brought to Argentina from the United States to pump the water up into troughs for the herds. Then the animals did not walk off their fat searching for a drink. The windmills were also used to pump water to supply the ranchhouses. Around the houses the people planted lawns and flower gardens.



EWING GALLOWAY

Argentine ranchers have imported fine breeds of sheep for both wool and mutton.

Use of refrigerator ships. After refrigerator ships came into use, meat was shipped from Argentina to England. The meat was kept frozen in the hold of the ship. But since Argentine meat was lean and had a strong taste, it was not liked in England.

Better breeds of animals. The ranchmen in Argentina saw that they must raise better breeds of cattle if they were to sell their meat. They sent to England for larger and better animals. These were kept in fenced fields to prevent the poorer breeds of cattle from mixing with them. Soon Argentina was producing better beef for export. Swine were brought to Argentina and raised for meat. Sheep ranchers imported other breeds of sheep, and these produced better wool and mutton. The people of the Humid Pampa began to engage in more and more foreign trade.

Planted pastures. Scrub cattle had



JAMES SAWDERS—COMBINE

Stockyards in Buenos Aires. Expert buyers look carefully at each steer before buying.

lived well enough on the bunch grass of the Pampas, but the cattle from English stock did not get along so well. Therefore, the ranchmen decided to kill off the grass and plant alfalfa. The grasslands were plowed up, and wheat was planted to kill the grass roots. Later, alfalfa was planted, and cut and used as feed for the cattle. Many more laborers were needed.

Coming of immigrants interested in farming. The *estancieros*, or owners of estancias, wanted immigrants to help them. Europeans began to come to Argentina in large numbers. These were chiefly Spanish and Italian, but German, French, British, Swiss, Austrian, Russian, and, later, Polish immigrants came also. Unlike the *estancieros* these people were interested in farming. They had been used to farming in their homelands, and they wanted to farm in the new land. They began to rent land on the big estancias.



CUSHING

Modern machinery is used to plow a vast cornfield in Argentina. Seagulls fly far inland to search for worms in the newly turned earth.

The tenants plowed the land and raised wheat, paying their rent by giving the owner a share of the crop. After four or five years, the tenant planted the land in alfalfa for the estanciero, who wanted alfalfa as feed for livestock. Then the tenant had to move on to another estancia where he did the same thing again.

The tenants lived in mud huts with earthen floors and with roofs made of sheets of iron. There might be a windmill near by. Sometimes there was not even a tree or a hedge in sight. The tenant and his family looked out on the vast, open, level plains.

The estanciero made money from the wheat and had a fine crop of alfalfa for his livestock. He could cut the alfalfa for five or ten years, getting as many as three cuttings a year from each field. Then he rented the land to new tenants to plant wheat again. The use of wheat to prepare the land for growing alfalfa made the Humid Pampa a great wheat-producing region.

Use of farm machinery. With the invention of farm machinery it was possible for an estanciero to cultivate larger tracts of land and thus to grow larger and larger

crops. On the Humid Pampa, fields of corn began to appear, extending as far as the eye could see. At harvest time hired laborers snapped the ears from the stalks and hauled the corn to huge bins in which it was stored.

Farmers began to try new crops, too, such as oats and barley. Since the country had no flax from which to make linseed oil, some farmers planted flax for a commercial crop.

Argentina, a farming country. For a long time wool, meat, and hides had been the main exports of Argentina. But early in this century, corn, wheat, and linseed also became valuable exports. Argentina has become a great farming as well as a cattle-raising country.

ESTANCIAS AND FARMS ON THE HUMID PAMPA TODAY

Today on the Humid Pampa large fields are planted with oats, corn, wheat, or alfalfa. Herds of cattle graze in other large fields. Windmills dot the landscape here and there. The quebracho posts of the barbed-wire fences seem to disappear in the distance.

Different kinds of estancias. On

almost all the estancias two fifths or more of the land is in pasture. This map shows you where the four main kinds of estancias are found.

Where are most of the grazing estancias located? On these almost all the land is used for grazing and only a small part is devoted to crops. Most of the land is too moist for wheat or alfalfa to do well. The growing season is also important. Because of a cold ocean current offshore, the summers in the southeastern part of the Pampa are too cool for crops to grow well. Therefore, as you might expect, more beef cattle are raised on the cool and moist southeastern Pampa than in the other sections.

Locate the alfalfa-wheat estancias. On these, alfalfa and wheat are the leading crops, but other, smaller crops of corn, flax, oats, and barley, are also grown. Two-year-old cattle from the grazing estancias are brought to this area for fattening. Animals can be fattened for market much sooner on alfalfa than on the native grass.

Notice that the estancias which use most of their land for raising corn are located around the river port of Rosario. Why does this corn-growing area lie east of the chief wheat-growing area?

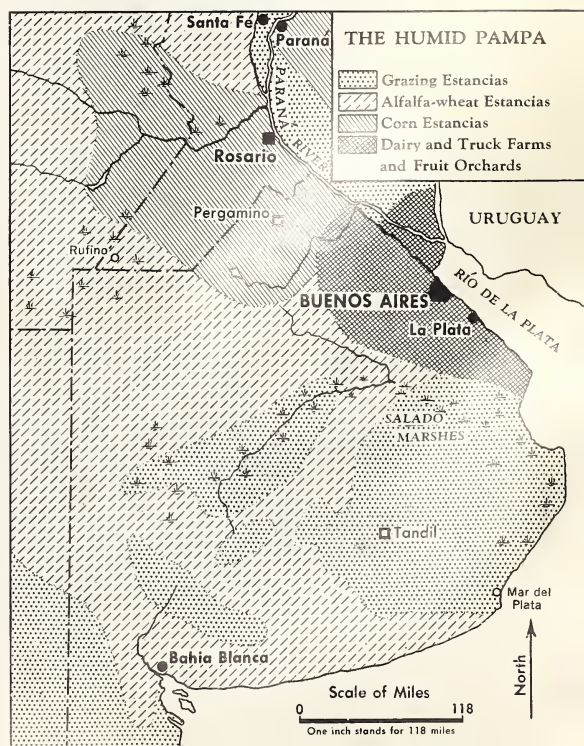
On the map locate the city of Buenos Aires. South and east of Buenos Aires is the region of large dairy farms. They send their fresh milk and dairy products to market in Buenos Aires. Always remember that you are likely to find a region of dairy farms near any large city in which the people want dairy products.

The truck farms raise fresh vegetables and fruits and transport them daily to Buenos Aires. Explain why these farms are located in the area shown on the map.

The grazing estancias. On the grazing estancias high-grade animals are raised: sheep for wool and mutton, and cattle for beef. When the cattle are about two years old, they are shipped to alfalfa-wheat estancias. There they are fattened for market on alfalfa. The belt of grazing estancias (find it on the map) is also becoming important in the production of butter.

On the grazing estancias you seldom find tenant farmers, because there is little agriculture. Since few people are needed to care for herds of sheep or cattle, this part of the Humid Pampa is thinly populated.

The alfalfa-wheat estancias and farms. Steers brought to the alfalfa-wheat estancias for fattening are kept six months to a year and then shipped to market. On an alfalfa-wheat estancia you will see thousands of cattle scattered about in the fields. The number depends on the price which the owner can get for the animals when they are ready





JAMES SAWDERS—COMBINE

Flour is one of Argentina's major exports. The docks in Buenos Aires are lined with large grain elevators, which are kept busy by incoming and outgoing shipments of grain.

for market. When he expects to get a good price, he fattens as many as his pastures can care for. He runs his estancia chiefly to fatten cattle.

The manager of the estancia is a busy man. He directs the raising of stock, the repairing of fences, the planting, cultivating, and harvesting of crops; in fact, he manages the entire estate. The house of the owner, if he lives on the estancia, is often a beautiful building standing in a grove of trees.

You have already read that part of the land on most of these estancias is worked by tenant farmers who raise wheat. The tenant farms are of different sizes. One farmer may rent only twenty acres, while another rents seven hundred acres. Each tenant farm is divided up again into smaller fenced fields. Some of the fields are very small. Light wire fences are often moved about as the tenant needs to grow new crops or make new pastures for his animals.

The largest field of the farm may be planted in wheat. Often another field is planted in corn, another in oats, and

still another in alfalfa. The tenant is chiefly interested in growing crops, especially wheat. He does not think of his land as pasture to which cattle can be brought for fattening. Only a few tenants buy and fatten high-grade steers for market. Most tenants have, however, a few cattle and many horses. The cows give a little milk, and their calves supply meat, but it is usually of a poor grade.

Although more and more farm machines are being used by both owners and tenants of estancias, Argentine farmers still use many horses. When the tenant plows, he hitches up six horses in groups of three to draw the plow.

A windmill pumps up cool water. "Made in U.S.A." is likely to be printed on the windmill and most of the farm machinery. The tractor, plow, and other machines have traveled far before reaching an Argentine farm. The farm machines stand out in the open the year around.

The wheat is harvested in November. Is this winter or spring wheat? When there is a drop in wheat prices, many



JAMES SAWDERS—COMBINE

Cheese produced in the dairy region near Buenos Aires is kept in storage rooms.

tenants move away from the estancias to make their living in other parts of Argentina. Besides the land farmed by tenants, there is on the Humid Pampa, especially around Santa Fé, an increasing number of smaller farm properties worked by their owners. Both grain and livestock are raised on this kind of farm.

The corn estancias. If you went to Argentina's corn-producing region at harvest time in March, April, and May, you would see not only many windmills but also many *trojes*. A *troje* is a great, round heap of ears of corn enclosed in a fence of wire netting and cornstalks. After the corn has been shelled by machine, it is placed in bags to be sent to market. Much flax is also raised. The crops are grown mostly by tenant farmers, while the owners of the estancias raise livestock, particularly sheep and cattle. The raising of hogs is not so important because the people of Argentina eat very little pork. The corn is not fed to Argentine livestock; much of it is exported to Europe, where it is used for poultry feed.



MONKMEYER

There is a good market in Buenos Aires for apples and other fruits grown near by.

This corn-growing section is one of the most thickly settled parts of the Humid Pampa and one of the most productive farming regions in the world. In this region there are more small farms and more large estates devoted to tenant farms than in any other part of the Humid Pampa.

The dairy farms. In the dairy region most of the large estates are divided and rented to tenant dairymen. One such estancia includes seven dairy farms, averaging in size about 350 acres and having on the average about 125 cows. Seven men care for the herd on a single farm. On each dairy farm is a house for the workers, a pen where the milking is done, and a water tank. The cows graze mostly on pastures of cultivated grass.

Truck farms and fruit orchards. Truck farms, which may cover only a few acres or as many as thirty, are found near the city of Buenos Aires. Thousands of these truck farms, very carefully cultivated, supply the great city daily with fresh vegetables. Because of the long growing season, fresh vegetables can

be had most of the year. Large fruit orchards are also found here. Some fruits and vegetables are raised in all parts of the Humid Pampa, but the apples, pears, peaches, and plums grown near Buenos Aires find a quick market in that city.

Landowner and tenant. You can see that huge tracts of land in the Humid Pampa are owned by only a few people. The landowners do not like to sell their land but want to keep vast estancias. They are interested in grazing high-grade animals rather than in growing crops. They spend their money for a more comfortable living, or for luxuries, or for travel.

Very different from the owners of land are the tenants who own no land and move from place to place. On small rented farms they grow most of the wheat produced in Argentina. They have supplied the labor to make the Humid Pampa a farming region, but the landowners have received most of the profit.

Use of the land by different peoples. In the time of the Indians only a sparse population could make a living on the Pampa. The Indian had to range over a vast hunting ground in order to obtain enough game for food. The early Spanish settlers also found it hard to get enough food for themselves and their families. They had no steel plows with which to cultivate large tracts of land and no cheap windmills to pump water. The land furnished them only a bare living. But later settlers brought in good breeds of cattle and sheep, obtained modern farm machinery, dug wells to get water, planted new kinds of grass for their animals, and fenced the fields so that they could use land for different purposes from year to year. As the use

of the land was changed in these ways, it produced larger quantities of food, and the number of people who could make their living in a particular area was greatly increased.

Today the Humid Pampa produces at low cost great quantities of wheat, corn, and meat. Why has it come to be one of the world's great producers of these important foods? There are several reasons. The Pampa is vast and very level and can therefore be cultivated easily with machines. The loess soil is deep and productive. The rainfall is sufficient for crops and comes all year round, with the most during the growing season. The mild winters allow farmers to do outside work all year round; ranch animals need no shelters. The Humid Pampa has port cities for exporting its products; no part of it is more than two hundred miles from a good ocean port. In addition, the Pampa farmers can sell their products, because many regions of the world, especially the industrial nations of Europe, must import food.

TRADE AND TRANSPORTATION

Roads. One does not motor for pleasure on the roads of the Pampa. The roads are wide but not paved, and in dry weather clouds of dust rise from them. In wet weather they become rivers of mud. Therefore, most of the people travel by railroad. Along each railroad there is a station about every twelve miles. From the estancias, cowhands and tenants bring in livestock and grain to the railroad for shipping. The little railway station is the link between the great estancias and the distant markets at Buenos Aires.

Link with Great Britain. Less than

a hundred years ago there were only six miles of railroad in Argentina. Then British companies began to build railroads across the Pampas. It was thought that large profits might be made from hauling the country's grazing and farm products to market.

But few of the necessary materials could be had in Argentina. The engines, freight cars, passenger cars, the iron, steel, and coal had to be imported. British companies supplied many of the materials and most of the coal.

However, railroads were easy and cheap to build on the Humid Pampa. The land was level, and the engineers did not have to make detours around mountains or tunnels through them. Not many bridges had to be built. There was no heavy snow in winter, and no great floods came at any time of year. Today a dense network of railroads crosses the

Humid Pampa, furnishing fast and cheap transportation.

Before World War II about four fifths of the railroads in Argentina were owned and managed by the British, and most of them were run by coal imported from Great Britain. But during World War II all the railroads were bought by the government of Argentina.

Railway lines. There are four main railway lines in Argentina. From these four, many other, smaller lines branch out in all directions. The railroad centers are the great port cities of Buenos Aires, Rosario, Bahía Blanca, and Santa Fé. Locate each on the map (page 133) and note the railway lines leading out from it. Note also the areas that are poorly served by railroads. Perhaps you can tell why.

To the stations in most parts of the Pampas a never-ending stream of wheat,

Road graders in Argentina. The country is now building better roads with modern equipment and scientific methods. When the surface is prepared, concrete will be poured.

CUSHING



corn, cattle, sheep, hogs, wool, and dairy products is brought for shipment by rail to the port cities. The chief port is Buenos Aires. Rosario and Bahía Blanca are next in importance. The people of Argentina also depend on the railroads for passenger service. Every day over five hundred passenger trains leave Buenos Aires.

Steamships to all the world. Most of the Argentine exports come from the Humid Pampa. From Buenos Aires, Rosario, Bahía Blanca, and other ports the products of the Pampa are carried by steamship to foreign markets. Argentina carries on about half of all the trade of South America with the rest of the world.

Argentina sends most of its beef to Great Britain. Many of the people of Great Britain live in cities and need meat. In return, Britain supplies part of the coal needed by Argentina. Argentina buys more goods from the United States than does any other Latin American country, but the United States buys only a small part of Argentina's products, such as hides and skins, leather, wool, and linseed oil. Many European countries buy the remaining exports.



Air transportation. Argentina has fewer miles of airlines for its size than any other South American country except Paraguay. The level land in Argentina makes possible fast, cheap transportation by railroad. From the map on page 155 you can see another reason: Argentina is at one end of the world's air routes rather than centrally located on them. However, its airlines are much used by the people who live in the large cities.

Buenos Aires is connected by commercial air lines with all the important capitals in South America and with many of the large seaports. The city is also connected with the air routes of Europe and of North America.

Great circles. You know that the equator is a circle separating the northern and southern hemispheres. We call the equator a *great circle*. Any circle which separates the earth into hemispheres is a great circle. Notice the lines of longitude on your classroom globe. Each of these divides the earth into hemispheres. Therefore, these north-south lines are great circles. You can draw any number of great circles on a globe, and they can go in any direction. Some of them are shown in this picture.

The shortest route between any two points on the earth follows a great circle. You can show that this is true by measuring such a route with a string on your classroom globe. Stretch your string between the most western of the two large Falkland Islands and Cape Breton Island (just southwest of Newfoundland). Mark the length of this route on the string. Will this length of string join these islands along any other route? The route which you have just measured follows a longitude line—a great circle. Thus you have proved that the shortest



WESTERN HEMISPHERE AIR LINES

route between these two islands follows a great circle.

Stretch your string as tightly as you can between Miami, Florida, and Buenos Aires. Your string lies on the great circle between these two cities.

Wherever possible, air routes and steamship routes follow great circles. Why?

CITIES OF ARGENTINA

Buenos Aires is very important to the rest of Argentina. From all the outlying regions of Argentina as well as from the Humid Pampa, the attention of the people turns to Buenos Aires. They turn to Buenos Aires as the capital, the largest city, the center of education, music, and

art, the chief market, railway center, and port, and the chief manufacturing city of Argentina.

The founding of the Spanish colony.

At the beginning of European settlement the Spaniards located the colony of Buenos Aires downstream from Asunción on the shore of the Río de la Plata at the only point where the water was deep enough to allow boats to reach a dry landing place. Most of the southern shore of the Plata is low and marshy and bordered with wide mud flats below the water. At the site chosen a small stream flows into the river, making the water deep enough for the kind of boats used by the Spaniards in the sixteenth century. The depth of the water was almost the only advantage of the location.

Growth of the little town. For more than two centuries Buenos Aires was not important; during this time there was little or no overseas trade.

The Salado Marshes, along which the settlers built a line of forts, are southwest of Buenos Aires. Thus the city was well within the area settled by the early white colonists. At first it was a Spanish fort, which later was useful in keeping the Portuguese from crossing to the south shore of the Plata. The Río de la Plata, on which the fort was located, became the most important waterway in South America, and Buenos Aires was a busy trading port. All the country beyond to the north, the west, and the south traded through Buenos Aires. Both Spain and England wanted to control this trade with the South American colonies. Even when the Europeans had begun to see that the little town of Buenos Aires was the gateway to Argentina.

As the Humid Pampa became a farming as well as grazing region, Buenos

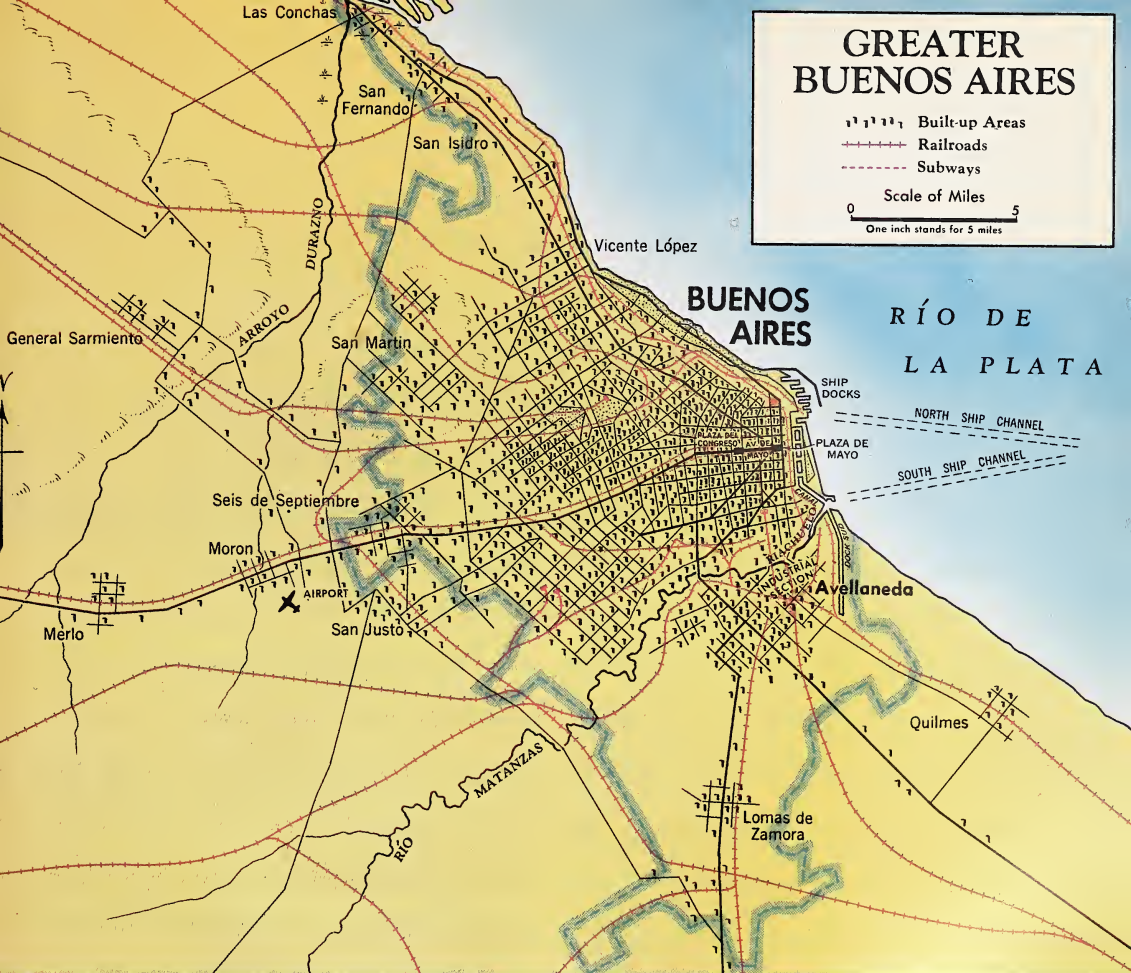
Aires grew larger and larger. Every improvement that made the plains more productive led to improvements in the city. When Buenos Aires was opened as a port, only about 24,000 people lived there. A hundred years ago the population was only 90,000. Today it is counted at over 3,000,000, having gained about 2,000,000 in the last forty years. About one out of every five people in Argentina lives in Buenos Aires.

Buenos Aires is the largest city in the southern hemisphere. From its docks are shipped about half of Argentina's exports. Of all the cities in the Americas only New York carries on a larger foreign trade.

How the city of Buenos Aires is laid out. This map shows Greater Buenos Aires, that is, the city and its surroundings. A central plaza, the Plaza de Mayo, is the heart of the city. The older streets are now much too narrow for the busy city, and many of them are being widened. New streets have also been opened, especially two long diagonal streets cutting across the older ones. Three subways, from the south, the west, and the northwest, meet at the plaza.

Find the Río de La Plata; the Riachuelo. In what direction from each of these rivers is the city of Buenos Aires? In what directions are goods brought to the city from the Pampas? Notice that the older streets either follow the general direction of the shoreline or are at right angles to it. Why do you suppose the city was laid out in this way?

Find the wide avenue called the Avenida de Mayo leading from the Plaza de Mayo to the Plaza del Congreso. At either end of this avenue are government buildings. Facing the Plaza de Mayo is the president's palace, called La Casa



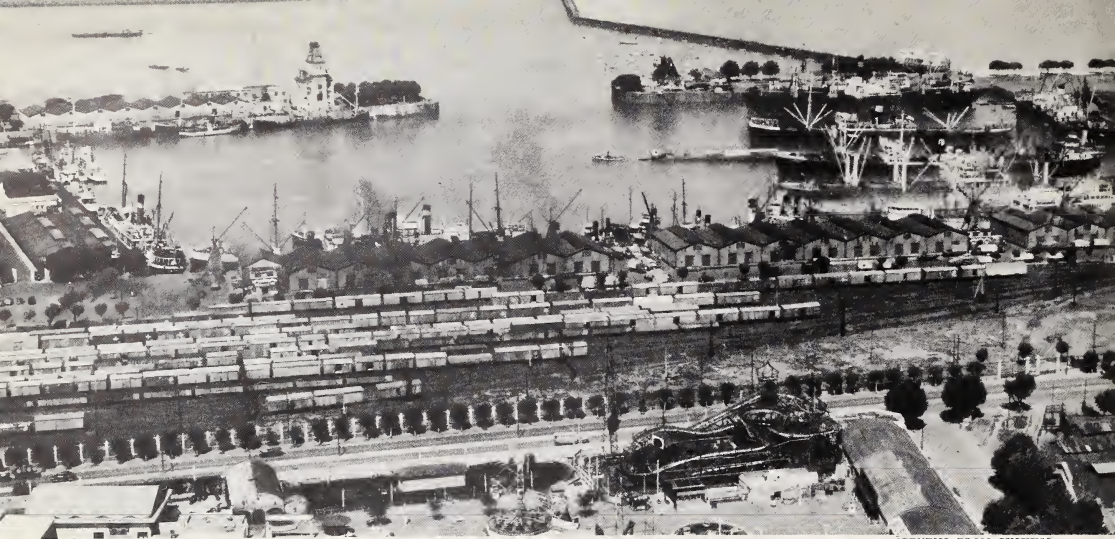
Rosada because it is rose color. The shopping center of Buenos Aires is north of the Avenida de Mayo. Here are located tall office buildings, banks, and retail stores. Buenos Aires is a growing manufacturing center with more and more factories. Where is the industrial section?

The suburbs of greater Buenos Aires are largely given over to residences, with miles and miles of low houses that are very much alike. These are occupied by people of moderate income. The homes of the wealthy people are in the north-western part of the city along the shore.

In the suburbs are also ugly, crowded slums where the very poor people live. However, the slums are gradually being cleared away, and better homes are being built and rented at low cost.

The port of Buenos Aires. Very important to the city is the port, which is not a natural harbor. Though the Plata was always deep enough at the site of the city for early colonial vessels, it was not deep enough for modern ocean-going vessels. At one time such ships could not get within twelve miles of Buenos Aires.

To keep up its trade the city had to improve its port. Millions of dollars were



A section of the dock area in Buenos Aires. Notice the many ships, large and small, the wharves, and the lines of freight cars. At the bottom of the picture is an amusement park.

spent in dredging the mud from the river bed to deepen the river. Wharves were built along the water front. Then warehouses and grain elevators were built along the wharves.

The port was satisfactory for a while, but it became too crowded as trade increased. Ships were lined up at the docks two or three deep waiting to be loaded or unloaded.

The people of Buenos Aires are now building a new port north of the old one. A port has been built at the city of La Plata, which is nearer than Buenos Aires to the ocean. In these ways it is hoped that the crowded conditions in the old port can be relieved. Miles and miles of new wharves have been built at the cost of many millions of dollars. The Río de La Plata carries so much silt that constant dredging is necessary to keep the channel open to big ships.

If Buenos Aires had not improved its harbor, the port could not handle a large foreign trade. The people have made changes that have greatly improved their

location and brought wealth to their city.

Interest in world affairs. As in all the rest of Argentina, the people of this great modern city are mostly white and of European descent, mainly Spanish and Italian. The people of Buenos Aires keep an interested eye on the corn and wheat belts of the United States and Canada and on the cattle and sheep markets of Australia and New Zealand. They view with alarm any threat of war abroad, for war largely prevents the shipping of wheat, corn, beef, and the other products grown in Argentina for export.

Like Paris or London, the Argentine capital is the center of much that goes on in its country, but Buenos Aires is not Argentina any more than London is the United Kingdom. Buenos Aires, facing the sea and depending on world trade, has become a great city largely because of the lands that lie behind it, particularly the Humid Pampa.

A great industrial city. Buenos Aires is the greatest manufacturing city in

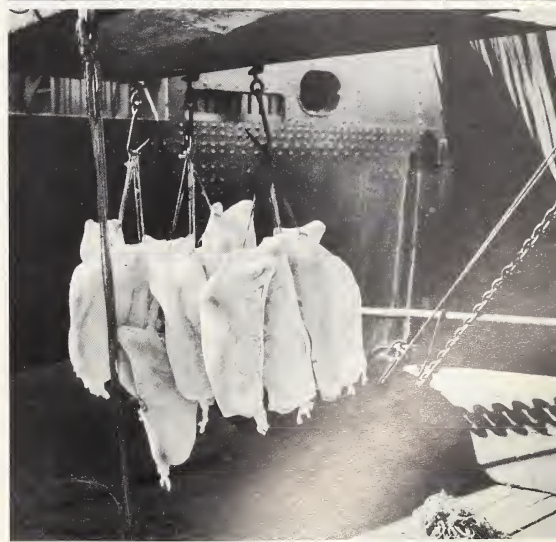
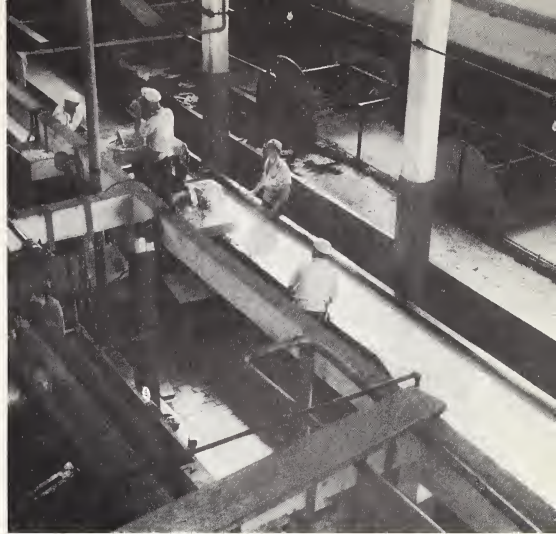
EWING GALLOWAY

Three of Argentina's animal products. 1. Lard is made in large troughs. 2. and 3. Meat and hides are loaded for shipment.

Argentina. Since World War I Argentina has depended less and less on Great Britain for manufactured goods. Its cities, especially Buenos Aires, have been building factories and supplying the country with finished products. During the past ten years especially, industries in Argentina have grown very rapidly. More and more people go to the cities to work in factories. As a result the population of the cities, particularly Buenos Aires, has increased. Because new factories are being built, the people who have moved to the cities have usually been able to find work.

The flour mills keep large numbers of people busy. A steady stream of cattle goes to the stockyards, slaughterhouses, and packing plants. Great meat-packing plants may be found many miles out of Buenos Aires. Not only is the meat packed and canned, but many by-products such as *bone meal* (used for fertilizer) are made.

The Humid Pampa and our Corn Belt. The region in which Buenos Aires is located is similar to the region that lies south and west of Chicago. Both regions are used for farming and stock raising. Both supply an abundance of raw materials to the city, thereby helping to make factories possible. But there are differences, too. Buenos Aires does not have a big market to the east as does Chicago, which serves our densely settled industrial cities. Finished articles can be sold



most easily in densely settled regions where people need them and can afford to buy them. Since there are few such regions in Argentina, Buenos Aires sends many of its products overseas to foreign markets, particularly those of Great Britain.

Power for factories in Buenos Aires.

A manufacturing city must have power to run machinery. The cheapest power that can be used to produce electricity is that from falling water. At present Buenos Aires has no water power at all. It must get its power from burning fuel in steam engines. This means that Buenos Aires must import fuels, especially coal and oil. The coal mines in Argentina are too small to supply enough coal, and depending on imported coal has disadvantages. If there is a shortage of ships to transport the coal, then Buenos Aires suffers.

In recent years Buenos Aires has been using less coal and more and more fuel oil. All Argentine oil fields are controlled by the government. The most important are in Patagonia, but oil is also obtained from fields along the Andean piedmont. However, Argentina must import from Venezuela and Aruba about half of the oil and oil products it uses.

Rosario. The second largest city of Argentina is Rosario, which has a population of over a half million people. This great port is located about two hundred miles upstream from Buenos Aires on the west bank of the Paraná River. Grain is brought to Rosario by railroad from the surrounding country, which is often called the Corn Belt of the Humid Pampa. Ocean-going steamships go up the river to Rosario for loads of wheat and linseed as well as for corn. The grain is slid down long chutes from the grain ele-

vators into the holds of the ships. From the docks of Rosario more corn is shipped than from any other port in the world. The city's location near the Corn Belt and on navigable waters has helped to make it a great grain center.

Córdoba. About three hundred miles west of Buenos Aires lies Córdoba, one of the oldest cities in Argentina. It is a commercial center for livestock, hides, and wool. The land surrounding Córdoba is one of the best grazing sections in the country. About twelve miles distant from the city, a great dam has been built across a stream, and from the reservoir which it forms, irrigation water is obtained.

Other ports. La Plata is located thirty-four miles southeast of Buenos Aires on the Río de la Plata. Its population is over 250,000. Like Buenos Aires, La Plata has built its port. The city is also a meat-packing center.

Santa Fé, on the northern edge of the Humid Pampa, serves as a link between northwest Argentina and the Humid Pampa. The city is located nearly four hundred miles up the Paraná River from Buenos Aires, at the farthest point upstream that can be reached by ocean-going vessels.

Bahía Blanca is in the southern part of the Humid Pampa, 250 miles south of Buenos Aires. Millions of dollars have been spent on Bahía Blanca's railways and docking system. Besides serving the Pampas, Bahía Blanca is a leading port for the mutton and wool of Patagonia.

Manufacturing. Argentina is the leading commercial nation of Latin America, but it is rapidly becoming an important manufacturing nation, too. Among its important factory products are foods, textiles, paper, glass, and



MAVER FROM MONKMEYER

A port on the Paraná River. Although compared with the loading wharves at Buenos Aires, this port is small and simple, it is very important to the inhabitants of the region.

furniture. As Argentina becomes more and more an industrial nation, there are certain to be changes in its trade with other countries.

Medium-size farms. At the beginning of this chapter, you were told that the last of the three great changes is still taking place on the Humid Pampa. This change has to do with both manufacturing and farming. As Argentina becomes more and more an industrial nation, the tenants on the large estancias migrate to the cities, just as the *inquilinos* of Chile have been doing. Many *estancieros* are having to sell parts of their estates because they can no longer obtain tenants. As a result, the Humid Pampa, like Chile, is slowly being changed from a region of immense estancias to one

of middle-size farms, each worked by the man who owns it. With modern machinery and methods of cultivation, these new farmers are making the Humid Pampa more productive than it has ever been.

Cities and trade. The large cities of Argentina are either seaports or commercial cities located on trade routes to other South American countries. Argentina is dependent on world trade. It needs fuel, heavy machinery, and other products of foreign countries. People in other countries need the surplus food, cotton, and linseed produced in Argentina. Neither Argentina nor any other nation in the modern world can be self-sufficient and still have a good living for its people.

Your Geographic Review

In many ways Argentina is like parts of the United States. See how many likenesses you can list. (Clue: Consider the climate, the natural vegetation, the crops raised, and the size of the country.)

MAKING COMPARISONS

1. Compare the people of Argentina with those of the other Latin American countries you have studied.

2. Compare the climate of the Gran Chaco with that of the Pampas. With what other countries does Argentina share the Gran Chaco?

3. Compare the crops grown north of Tucumán with those grown south of this city. Why are they different?

4. Compare the life and interests of the tenant farmers in the Humid Pampa with those of the estancia owners. From where did these farmers come? What crops did they plant?

5. Compare the foreign trade of Argentina with that of Venezuela.

6. How does Argentina compare in number of airlines with other American countries? What means of travel is used most in Argentina?

KNOWING AND USING WORDS

Write sentences using each of these words. Try to use more than one of the words in each sentence.

piedmont	bodega	loess
gaucho	locust	flax
tannin	great circle	bola
linseed oil	yerbe maté	oasis
quebracho	guanaco	rhea

WHAT DOES THE MAP TELL?

1. Find the city of Mendoza on the map on page 57 and describe its location. What do you see on the map near Mendoza that would suggest one reason why Mendoza has become important?

2. Describe the location of Patagonia. What river forms the northern boundary of Patagonia? Into what body of water does this river flow? Between what latitudes does most of Patagonia lie? Why is most of Patagonia thinly settled?

3. Locate Iguassú Falls on the map on page 133. Near what borders are they found? Can you tell from the map why these falls have not been put to use?

4. Using the map point out the advantages of the site of Buenos Aires for foreign trade.

5. Turn to the map on page 149. Describe each kind of estancia. Tell why each is located as shown on the map. Consider climate, transportation, and markets.

6. At Mendoza the hot deserts of the north begin to change to the cool deserts of Patagonia. A trip taken north from Mendoza through the desert would be a hot one, whereas a trip south would be a cool one. Explain this, considering latitude, position on the continent, and ocean currents. Why is Patagonia both cool and dry?

7. Copy the map on page 134. In each of the five regions write the chief products of that region, as near as possible to the area in which they are produced. Your map should show at least fifteen products.

GIVING REASONS

1. Why has Tucumán become the largest city in northwest Argentina?

2. Why is the area immediately surrounding Tucumán an important sugar growing region?

3. Describe the kind of houses in Mendoza and tell why they have been built in this way.

4. Why is the Northeast suitable for raising animals?

5. Why is flax a valuable plant? What is done with the oil? What is done with the left-over cake?

6. Why was travel across the Pampas difficult in the early days? How did the building of fences affect travel?

7. Tell why water was scarce in the Humid Pampa. What has been done about it?

8. Why did the ranch owners introduce new breeds of cattle into Argentina?

9. Explain why the people living in Buenos Aires can have vegetables almost all year at reasonable prices. What fruits are most plentiful?

SOME QUESTIONS TO TALK OVER

1. What kind of products does Argentina lack? How does Argentina fill these needs?

2. How are grapes grown? Tell what kind of home a Mendoza vineyard owner has. What is done with the grapes?

3. What has the Argentine government done to encourage cotton farming in the Gran Chaco? Have the cotton farms been successful? Why?

4. What is the main activity of the ports in Patagonia? Where do the boats carrying the products of Patagonia go?

5. What crops are grown in Patagonia? Why is the Río Negro valuable?

6. Tell about the changes that have come about in the use of the Humid Pampa from the time of the Indians to the present time. What natural advantages does the Humid Pampa have that help to make it so productive and valuable? What part have the seaports played in this development?

THE REGIONS OF ARGENTINA

Show a region in Argentina which is:

dry	productive
wet	not productive
cold	irrigated
warm	not irrigated
highland	densely populated
lowland	not inhabited
on the coast	commercially important
inland	locally important only

TEST YOUR UNDERSTANDING

1. How did the Humid Pampa come to be divided into very large tracts owned by a few people? In what ways is this an advantage and in what ways is it a disadvantage?

2. In what ways is the Humid Pampa similar to the United States west of Chicago? In what ways is it different?

3. Why does the estanciero move his fences about from time to time?

4. How are cattle on the Pampas fattened for market?

5. Explain why the Humid Pampa is a good region for raising grain.

6. For what purpose are windmills used in Argentina?

7. Tell how the oases around Mendoza obtain their water supply.

8. Why are tannin mills located near the Paraná River?



SCREEN TRAVELER FROM GENDREAU

Gauchos tending sheep in Uruguay. The gently rolling countryside is covered with good natural grass. In the distance trees have been planted around the estancia buildings.

Uruguay

Uruguay is the smallest country in South America. Almost all of the people of Uruguay are of European descent—chiefly Spanish or Italian, along with some British, French, German, and Swiss. There are some mestizos, but hardly any pure-blooded Indians or Negroes. The people of Uruguay closely resemble those of Argentina.

Uruguay is a modern country. Its people have good schools, comforts, and even luxuries; few of them are very poor. Every part of its territory is used to good advantage. All but a small part could be used for crops; however, almost three fourths of the land is used as pasture for cattle and sheep. Why is so much of Uruguay's land used for grazing?

URUGUAY ON THE MAP

Location. Notice on the map on page 57 that Uruguay lies between the two largest South American countries, Brazil to the north and Argentina to the south and west. Uruguay separates the large and important population centers founded long ago by the Spanish in Argentina and the Portuguese in Brazil.

Now turn to the map on page 133, which shows all of Uruguay at a larger scale than on the map of South America. Uruguay lies at the mouth of the Plata. The main channel of the river lies close to the southern shore of Uruguay. Since Buenos Aires is on a side channel that has been dredged through the shallow mud banks, no ocean ships can get in or out of Buenos Aires without passing close to Uruguay. At the mouth of the Plata locate Montevideo, the very important seaport and capital of the country.

The land. Uruguay is made up of gently rolling hills covered with waving tall grass. In what latitudes does Uruguay lie? The climate is mild, not hot in summer and not cold in winter. At all times of the year there is usually enough rainfall to keep the pastures green.

How many streams can you count on the map of Uruguay? Streams of clear water flow through wooded valleys. Uruguay is almost without trees except in the valleys and along the banks of streams. Near the point where the Río Negro flows into the Uruguay River, the valley is thickly forested.

Remember that Uruguay has a mild climate, gentle slopes, plenty of clear water, and grass that makes good feed for grazing animals.

CATTLE AND SHEEP RANCHES

An estancia. There are many estancias much alike in Uruguay. One of them, only a few miles east of the Uruguay River, consists of forty square miles laid out in the shape of a rectangle. It is divided, by means of barbed-wire fences, into four pastures. The ranch house is in the middle of the estancia at the point where these four fields come together. It is a one-story dwelling in the Spanish style, built around a patio. Near by to the south are a few small buildings in which the hired workers live. These are the only buildings on this large ranch.

SCREEN TRAVELER FROM GENDREAU

An estancia. Notice the Hereford cattle, the natural grass, and the ranch buildings of tile and cement. Would you expect to see wooden houses in Uruguay? Explain your answer.





SCREEN TRAVELER FROM GENDREAU

Most of Uruguay is treeless prairie. Explain the trees you can see in the picture above.

A grove of *eucalyptus trees* has been planted around the ranch house to supply shade. (Eucalyptus trees have scanty foliage and white bark, which peels and hangs from the tree in loose flaps.) A short distance north of the house about an acre of ground has been planted with vegetables, corn, and oranges for the use of the owner and his family. No other crops are grown there.

All the rest of the estancia is a treeless pasture land on which thousands of sheep and cattle graze. Because there is plenty of rainfall, the natural grass is excellent. Water for the herds is supplied by streams rather than by wells as on the Humid Pampa.

The ranch animals. On this ranch are fine herds of Hereford cattle, which the owner raises for market. These hardy animals have a heavy, thick coat of hair. They are mostly red in color but white underneath, with white faces, white necks, and white feet. Hereford cattle are grown for beef and can be

marketed at an early age. Such high-grade beef cattle bring good profits to their owner.

Besides cattle the estanciero raises flocks of high-grade Merino sheep. Sheep of this kind have white faces and are thickly covered with fine wool down to their hoofs. They are kept mostly for wool, but some are sold for mutton.

Few tenant farmers. The estancieros have not brought in large numbers of tenant farmers to plant alfalfa, as the estancieros in Argentina have done. The grass in Uruguay is rich enough to fatten cattle, and therefore, the estanciero has no need of alfalfa.

Public driveways and roads. If you visited Uruguay, you would see, running alongside the highways, separate roads for livestock. When an estanciero has animals to sell, he has several of his men drive them to market on one of these public driveways built especially for ranch animals. It is a wide lane separated from the highway and from the neighboring fields by barbed-wire fences. Along one side of the drive is a strip of grassland that supplies feed for animals being driven a long distance. A country like Uruguay, where most of the people are engaged in raising sheep and cattle, needs separate driveways for livestock.

Reasons for ranching. There are several reasons why most of the land in Uruguay is used for pasture. First, from the very beginning of settlement in Uruguay, the land was thinly settled, and the raising of stock was a good way a few people could use the large tracts of land. The Uruguayans love the free and healthy life of the ranchmen. They take little interest in agriculture. In Uruguay, from the early days of settlement, raising live-

stock has been looked upon as a pleasant way to make a living, and the Uruguayans of today feel the same way.

Second, the natural grass of Uruguay is so good that the ranchmen have never needed alfalfa to fatten high-grade cattle. It has never been necessary for them to bring in tenant farmers to prepare the fields for alfalfa. Therefore, while the tenant farmers were developing commercial farming on the Humid Pampa, fewer people who wanted to farm settled in Uruguay.

Third, by raising livestock to sell in the markets of the world, the people have made money. They fence in their land, separating one pasture from another so that they can breed high-grade animals. They have selected the kinds of cattle that produce meat at an early age and the kinds of sheep that produce both fine wool and mutton. Every year, Uruguay exports to foreign markets millions of dollars' worth of wool, beef, canned meats, and hides.

Fourth, the land and climate are well-suited to the raising of livestock. The climate is so mild that the ranchmen do not have the expense of building shelters for farm animals. The many small streams provide plenty of water. Drouths and floods are rare.

The grazing land is good, and the people know how to use it for raising livestock.

Ranch products exported. In Uruguay large packing plants prepare the meat for shipment. Every year many thousands of cattle are slaughtered, and the meat is chilled or frozen. Large quantities of meat are also canned. In the value of its meat exports little Uruguay is second in Latin America only to Argentina. In 1947 Uruguay supplied

a tenth of the meat exports of South America. The chief purchaser of this meat was Great Britain. Besides meat, thousands of tons of hides and skins are exported every year. In addition, since World War II, Uruguay has been furnishing more than a fifth of the wool exports of Latin America.

Cattle raising in South America.

This map shows where cattle are raised in South America. Notice that the cattle ranches are found near the coast where the ocean ports are located. Notice also that the ranches are found chiefly in the cooler lands of Argentina, Uruguay, and the highlands of southern Brazil. Here enough rain falls to provide good pasture most of the year. Because the winters are mild the ranchers do not have to build winter shelters for the cattle.

These South American grazing regions





EWING GALLOWAY

Corn stalks being taken from the field. Most of the corn grown in Uruguay is used to fatten cattle. Although it is one of the main crops, it is not important as an export item.

have many advantages for producing meat. They are not far from ocean ports. Many of them have good natural pastures. In most of them, both land and labor are cheap. For these reasons good beef is produced in South America at less cost than in the United States.

FARMING

Suitable land for farming. Most of the land in Uruguay is suitable for farming as well as for ranching. There is generally enough rainfall in Uruguay to grow crops the year around. Yet only about four persons out of every hundred make their living by farming.

The farmers. In Uruguay, as in Argentina, most of the descendants of the early Spanish settlers have kept on ranching. The few farmers are descendants of immigrants who came from Europe more recently. The ranchers of Uruguay know that Argentina can raise more grain per acre on most of the Humid Pampa than can be raised anywhere in Uruguay.

Since less profit can be made from a farm in Uruguay than from a farm in Argentina, the ranchers of Uruguay are quite willing to let Argentina do most of the farming.

Farm lands and crops. The small amount of farming that is done in Uruguay is centered along the north bank of the Río de la Plata, with other small farming areas in the northeast and the west. The four main crops are wheat, corn, citrus fruits, and rice. Wheat is planted on over half of the crop lands and supplies most of Uruguay's flour. Much of Uruguay's wheat is exported in this form. The corn and also oats are used to help fatten cattle. But the most valuable farm product exported is linseed.

Besides these crops, tobacco and small amounts of barley, other cereals, vegetables, and fruits are grown. Wine-making from the large crop of wine grapes is an important industry in Uruguay. As in Argentina, locusts do great damage to all these crops. The Uruguayan government keeps a force of men

who are trained to fight the locusts and sometimes uses soldiers.

At present it does not seem likely that Uruguay will change from a livestock country to an agricultural country. The land is well suited to livestock raising, and there is money in that work so long as the ranchers can sell their products. Even if the profit were smaller, it is likely that most of the people would keep on ranching. That is the way they prefer to live.

CITIES AND TRADE

Montevideo. The largest city, Montevideo, is also the capital and the chief port of Uruguay. It is not so old a city as Buenos Aires. It was founded much later by the Spaniards because they wanted to stop the southward advance of Portuguese settlement. Of the population of Uruguay about one fourth lives in Montevideo. It is the fifth largest city in South America.

Montevideo has become a well-known resort city. Wealthy people, mostly from

Argentina, visit the city especially during the summer months, from December to March, to enjoy the beaches and the social life.

The capital is an Atlantic port. It has a natural harbor, a bay protected by a small peninsula. Even though the harbor has always been good, much money has been spent in improving it as well as in building wharves and warehouses. A good railway system brings most of Uruguay's products to the port of Montevideo for export. In return for its exports of wool, beef, canned meat, hides, and linseed, Uruguay receives large amounts of manufactured goods such as automobiles, machinery, textiles, and building materials and also imports smaller amounts of sugar, lumber, yerba maté, and many other products.

Other cities. Paysandú, the second largest city of Uruguay, is located on the Uruguay River about three hundred miles from the capital. Besides being a port that can be reached by ocean steamers, Paysandú is a railroad and meat-packing center.

Montevideo, besides being the capital and chief seaport of Uruguay, is a famous and popular resort city. Its clean, sandy beaches are lined with bath houses and colorful umbrellas.

MONKMEYER





EWING GALLOWAY

Wool is tightly pressed into bales by machine before it is sent to a seaport for shipping.

Salto, another port, lies upstream on the Uruguay River at the farthest point that is navigable by boats. It is located at the foot of falls and rapids in the river. The name, Salto, means "falls." A big power plant is being built just above Salto.

Neither of these Uruguayan cities is large or important enough to be a rival of Montevideo.

Importance of foreign trade. Like Argentina, Uruguay depends a great deal on selling its products in foreign markets. In the past when trade was good, Uruguay became wealthy. For a long time

After the wool has reached a seaport, it is loaded onto freight ships by huge cranes.

PHILIP GENDREAU, N.Y.



the value of its trade for the number of its people was the highest in South America. But when foreign countries had little money to buy Uruguay's products, Uruguayan incomes dropped. Many people in Uruguay lost their jobs, and the wages of the rest were low. Uruguay has been prosperous only when wool, meat, and hides brought good prices in world markets. The people depend much on a single industry—raising livestock.

URUGUAY, A BUFFER STATE

Because of the location of Uruguay between the two largest countries on the continent, it has become known as a *buffer state*. A buffer state is a small country lying between two larger countries that might otherwise quarrel over the boundary between them.

Early conflicts. In colonial days the Portuguese in Brazil and the Spanish in Argentina both desired to control the mouth of the Río de la Plata. When Brazil declared its independence, its territory extended all of the way to the shores of the Plata. Then an army from Argentina invaded the territory which is now Uruguay. Later the British offered their help in settling the dispute and persuaded the two warring countries to sign a peace treaty. Argentina and Brazil agreed to give up the disputed territory and allow it to become the independent country of Uruguay.

A modern, united nation. Today Uruguay is a small but modern country. The majority of its people can read and write. It is a democratic country with no very wealthy or very poor classes of people. Most of its citizens know what is going on in their country and take part in its affairs.

Working With Geography

You have learned that three fourths of the land in Uruguay is used for cattle grazing, although most of it is good for farming. There are at least four good reasons why Uruguay is and will probably remain a livestock country. Tell what these reasons are.

Now describe what you might see on a cattle and sheep ranch in Uruguay. Think of the size of the ranch, the buildings, the activities, and the people.

MAKING COMPARISONS

1. In what ways are the people of Uruguay like those of Argentina? In what ways are they different? Compare them on the basis of wealth, kind of people, use of the land, and ways of living.

2. Compare Uruguay's chief exports with Argentina's.

CAN YOU READ MAPS?

1. Using the maps on pages 61, 63, and 133, tell as much as you can about the land, the climate, and the vegetation of Uruguay. Tell in what ways all three are good for ranching.

2. Into what river does the Uruguay River flow? In what country is its source?

3. Name two large cities at about 35°S latitude. Of what country is each of these cities the capital?

4. The three largest cities of Uruguay are Montevideo, Salto, and Paysandú. What do all three have in common?

5. If you were to send freight from

Salto to Montevideo, what types of transportation could you use?

6. What countries border Uruguay?

7. On a map of South America show the chief farming region in Uruguay. What group of people does most of the farming?

CAN YOU TELL WHY?

1. Uruguay is a good place for raising cattle and sheep. (Consider facts about climate, land, and rainfall.)

2. The roads of Uruguay are especially suited to the needs of the country.

3. Good beef can be produced in Uruguay at less cost than in the United States.

4. World conditions affect the incomes of people in Uruguay.

5. We call Uruguay a *buffer state*.

6. Early conflicts were responsible for the creation of Uruguay as an independent country today.

7. There are many tenant farmers in Argentina and few in Uruguay.

8. The climate of Uruguay is mild—neither hot in summer nor cold in winter.

9. The estancieros of Uruguay raise Hereford cattle.

10. Montevideo has a better harbor than Buenos Aires.

MAKING LISTS

1. List ways in which Montevideo differs from Buenos Aires.

2. Make a list of the leading crops of Uruguay. Be ready to tell how each crop is used.



EWING GALLOWAY

Guarani Indians in the forests of Paraguay. These people live by hunting, fishing, and gathering forest products, which they trade for clothing and other necessary goods.

Paraguay

Paraguay is a small inland country just southeast of Bolivia. Its people are mostly descendants of the native Guarani Indians and the early Spanish settlers. It is thought that the Guarani first lived in the basin of the Paraguay River. At the time Columbus discovered America, these Indians had spread over a large part of South America east of the Andes. They were nomadic farmers growing corn and manioc and adding to their food supply with fish and game. Today most of the inhabitants of Paraguay speak the

Guarani language, but many of them also understand and speak Spanish.

Paraguay is largely a farming country, but cattle raising is also an important occupation. Because the climate of Paraguay is mild and much of the land is suitable for farming, it would seem to be easy for the people to make a good living. Instead Paraguay is not a prosperous country, and most of the people are poor. Much of Paraguay's food has to be imported. Why? As you read this chapter, look for the reasons.

PARAGUAY ON THE MAP

The country lies entirely east of the Andes Mountains. Using the map on page 57, name the countries just beyond the borders of this inland nation. Notice that Paraguay is cut almost in half by the Tropic of Capricorn.

Notice also that the Paraguay River divides the country into two parts, an eastern and a western part which are quite different from each other. Just east of the river are low, level plains usually flooded at high water. Where do you see hills in this area? East of these hills a plateau rises from one to two thousand feet above the plains. West of the river is the great lowland region called the Gran Chaco, which extends into Bolivia, Brazil, and Argentina.

Forests and grasslands. On the eastern plateau where the rainfall is heavy, grow dense forests of tall broadleaf trees, some of them evergreen, some deciduous. Between this forest and the Paraguay River tall grass grows in the marshes. But along the banks of each stream are ribbons of dense forest.

The vegetation of the Chaco on the western side of the river is forest and grassland mixed. There we find thorny, deciduous trees growing close together in thickets. Some areas near the rivers have taller trees forming bands of thick forest. In other areas small trees grow far apart with grassy spots between. In still other areas are great stretches of grassland.

Where the people live. Most of the villages and towns of Paraguay are located on a narrow belt of hills extending southeast from the capital city, Asunción. Find it on the map on page 133. Now locate this densely settled area on the

population map, page 11. Then find the narrow belt of hills on the map on page 57. How many cities can you count southeast of Asunción? It is the chief center of trade in Paraguay and the largest city, but its population is not over a hundred ten thousand.

FARMS AND RANCHES

The cultivated lands of Paraguay lie chiefly in the hilly land west of the plateau. Only a small part of the eastern plains is cultivated. Some of these plains are covered with water during the rainy season and are dry enough for farming only part of the year. Most of the Paraguayans cultivate small farms, growing only one or two commercial crops. Thus not all the land that could be used for farming is farmed.

Cotton is the chief money crop grown and the chief export. But for food the farmers also raise such crops as corn and manioc. Many people in Paraguay live in much the same way as the farmer and his family about whom you will now read.

A subsistence farm. This farm consists of sixteen acres in the southwestern part of Paraguay, not many miles southeast of the old city of Asunción.

The house stands near the dirt road which runs past the farm. It is a low, one-story building of wood and *stucco*, a cement mixture that hardens after being smoothed on the outside walls with a trowel. Its roof is made of galvanized iron. An *arbor*, or arch of wood strips covered with vines, is attached to one side of the house. It is here that most of the simple farm tools—the ax, the hoe, and the machete—are kept and most of the household activities take place. Farm

machinery is too expensive for the farmer to buy.

Water is obtained from a well near the arbor. A rope running through a pulley fastened to a crossbeam above the well is the means of lifting the pail of water from the well.

Subsistence crops. Beyond the well are fruit trees which furnish both food and shade to the family. The fruits raised are oranges, bananas, peaches, avocados, papayas, and *mangoes*. The mango is a pear-shaped, yellowish-red fruit with a soft, juicy pulp and a hard stone.

Back of the farmhouse is the garden in which vegetables, including beans, eggplant, peanuts, and peppers are grown. There is a patch of manioc and another of corn, neither receiving much care. These foods are as commonly eaten in Paraguay as are bread and potatoes in the United States.

Besides the food crops, the farmer raises his own tobacco, which he rolls into black cigars. Pipes are not used, and Paraguayans seldom smoke cigarettes.

The pasture. The farmer sets aside

two acres of grass for his seven cows, three donkeys, and two oxen. He also lets the animals graze on the other fields after he has harvested his crops. His poultry, too, feed in the fields.

A market crop. Although the family depends chiefly on its own crops, occasionally some money is needed. Each year, therefore, the farmer plants five acres of cotton as a market crop. When early autumn comes in April, he and his family will be busy harvesting the cotton. After it has been picked, it is sorted and cleaned by hand and then put into large bags. The whole family helps get the cotton ready for market, doing most of the cleaning in the arbor.

Early one morning the farmer, aided by his wife and eldest son, loads the huge bags of cotton into two oxcarts. The farmer will drive one cart to the cotton gin in Asunción; his son will drive the other. The oxcarts are wooden vehicles with one huge wooden wheel on either side. The bags of cotton are piled high on the cart, and the driver sits on top, directing the ox on its way.

Late in the day the farmer and his son



BLACK STAR

Women peeling manioc. Most of the people of Paraguay make all their bread from the pulp of manioc.

EWING GALLOWAY

A yerba maté plantation. Branches are cut from the trees, loaded into wooden carts, and taken to market.



reach the city of Asunción. They drive to the cotton gin where the farmer sells his cotton. Then he and his son set off for the market.

The market place in Asunción. In Asunción the market occupies an entire block. Some of the stalls are covered overhead to afford shade to the merchants. Articles are displayed on tables or counters, or spread out on the pavement. The owners sit near their wares.

Scattered through the market place are oranges stacked up in huge mounds. Oranges are common in Paraguay, for they grow everywhere, even in the forest. Only the best ones are on sale in the market, but they cost very little. Spread out here and there are melons, straw hats, cages of fluttering birds, many kinds of fruit, and tobacco. Among the products for sale are two that are found in most Paraguayan markets, yerba maté and *ñanduti* lace.

For years the women of Paraguay have made this beautiful, cobweb-like lace. They were taught to weave it by priests

who visited the country long ago. They spend hours in patient toil making the lace but sell it for very little money.

Cattle raising. In the area just east of the Paraguay River are many cattle ranches. There are several times as many cattle as people in Paraguay. The cattle are not of high grade. Cattle and cattle products such as hides and canned beef are regular exports of the country.

Transportation. It is difficult for the Paraguayans to transport their cotton, quebracho, and other products to a seaport from which they can be shipped to foreign markets. In this inland country are few good roads and very few rail lines. See whether the rail lines, shown on the map on page 57, are where you would expect them to be. Since the amount of freight moved over these railroads is small, the cost of transportation by rail has remained high. If more freight were shipped, railroad rates would be lower since the cost of running the railroad would be divided up among more people.

People depend largely on the rivers for transportation. However, even the most important river, the Paraguay, is not easily navigable even for small boats. It winds about so much that one has to travel many extra miles from one river port to another. During the dry season, when the water is low, the river drops sand and mud in its channel. Sometimes so much sediment is deposited that sand bars are built up in the channel, dividing it into several parts. From one year to the next the course of the river is never quite the same. During the rainy season, the river often floods its banks and cuts a new channel. Since it changes its course so often, pilots of river boats must watch carefully for new sand bars. Otherwise their boats may suddenly go aground. A village close to the river may suddenly find itself without any navigable water near by. Only in few places does the channel remain year after year close to high ground. One of these is the western edge of the hilly belt in Paraguay. Here the city of Asunción is located.

Asunción. At Asunción the cargoes of large river vessels are transferred to smaller river craft that go upstream. Imports are generally textiles, foods, and manufactured goods. Meat, hides, tannin, yerba maté, cotton, and tobacco are shipped to the outside world. But these exports are so small in quantity as to be of little commercial importance.

THE CHACO WAR

Paraguay and Bolivia recently had a war which lasted for four years. They were fighting for control of the part of the Chaco north of the Argentine border, a vast area of small population. This area

could be good farm land, although neither Paraguay nor Bolivia wanted it for that reason. Bolivia wanted to extend its territory eastward to the Paraguay River in order to obtain an outlet to the ocean. Paraguay hoped to develop oil fields in the western Chaco. These two countries fought each other until their money was gone and then went into debt buying war materials. Neither country got what it wanted, although Paraguay gained some land.

Today the Paraguayans are living in poverty in a country with enough resources to provide them with a comfortable living. You have seen that Paraguay has a good climate, good soil, and plenty of water for farming. Yet the majority of people work on small subsistence farms just as their ancestors did. They use primitive methods and have no farm machines. Disease is common among the people. Three fourths of the population cannot read or write.

The Chaco War is only a small example of war between nations, but it shows us that war is a very bad way in which to settle geographic problems. If oil is needed, it can be obtained by trade. Also, if people make good use of their skills and resources, and trade with neighboring peoples, they do not need an ocean port to be prosperous.

The money spent on this war could have been spent in developing Paraguay's resources. It could have been used to buy farm machinery and to build roads and railroads to transport farm products to market. The people could have been taught to care for their health and to use modern methods of agriculture and ranching. If these things had been done, do you think the people of Paraguay would be better off?

Understanding Geography

Both Uruguay and Paraguay have good climates, good soil, and plenty of water. Uruguay's people are prosperous, but most of the people of Paraguay are living in poverty. If you understand the geography of these countries, you will be able to explain this difference between them. Write about the part played by education and by the development of natural resources in each country.

TO TALK ABOUT

1. Is a cotton farm such as those in Paraguay large or small? Is it commercial or self-sufficient?
2. Tell how to prepare and drink yerba maté.
3. Why does Paraguay have to import part of its food supply even though the country has plenty of good farm land?

LEARNING FROM A PICTURE

This picture was taken along the Paraná River southeast of Asunción. The trees are broadleaf and both evergreen and deciduous. Which ones are deciduous?

There are palm trees in the picture, and therefore we know that the climate is mild in winter.

It is late fall or winter or early spring. How do we know? During what months might this picture have been taken?

There is dense forest along the river banks, but grassland with scattered trees on the higher land away from the river. What vegetation fits this description?

Write as much geographic information as you can gain from the pictures on pages 73, 103, and 164.





Above Rio de Janeiro. Beyond the tall and modern buildings of the business section stands the peak called Sugar Loaf. To the left of the peak is the entrance to Guanabara Bay.

Brazil

A large country. Brazil, the country about which you will read next, is the largest of all the Latin American countries. It is larger than any country in the world except the Soviet Union, China, and Canada. The United States of Brazil occupies nearly half of the continent of South America.

A small population. Even though Brazil is so vast, its population is only

about a third of the population of the United States. However, near the eastern seacoast of Brazil are crowded areas and many cities, two of which have more than a million inhabitants. Brazil's large cities have been increasing rapidly in population as factories have been built and people have come to the cities to work in the factories. Today Brazil has more manufacturing than any other coun-

try in Latin America. But between the cities and inland from the coast is a great wilderness with few people.

When you hear of a wilderness, you are likely to think of land that has not been explored. However, the Brazilian wilderness has been explored again and again. From time to time it has been tramped over by men who have sought gold or some other valuable resource. Where they found gold, they built towns, but their settlements were not lasting. They moved on to other regions after the richest deposits had been mined. Today the inner part of Brazil is still only thinly inhabited.

A variety of races. The earliest white settlers were Portuguese, whose native tongue became the language of Brazil, instead of Spanish, which is spoken in most of the other Latin American countries. Besides people of Portuguese descent, Brazilians include Indians, Negroes, orientals and whites who have lately come from Europe and Asia, and people of mixed race. Nowhere in the world, perhaps, is there a land inhabited by a greater variety of races.

Old and new ways of living. Naturally there are great differences in the people's ways of living. In the large cities people live much as they do in the cities of Europe and North America. In some of the farming districts near the seacoasts the land is cultivated with modern methods. Here coffee, the greatest money crop of Brazil, is grown. Sugar, tobacco, cotton, rice, cacao, and other commercial crops are also raised.

But ways of living are quite simple in much of the *interior*, or the inner part of Brazil. In some of the thick forests of the north, men make their living merely by gathering forest products such as

rubber, gums, oils, wood, and Brazil nuts. These are sold to traders who travel deep into the forests in river boats. In the forests and grasslands of the central interior are small groups of people living around ranch headquarters or in small towns. They earn the necessities of life by growing subsistence crops and raising cattle.

If you flew over Brazil in a plane, you might see hundreds of smoking patches of land where small areas are being cleared for planting by burning the trees and underbrush. Each farmer will raise only one or two crops and then move on to lay out another small farm. After he has gone, bushes and trees will spring up and cover the land again.

Rich resources and poor people. In reading this chapter you will discover that Brazil still has great resources—rich mineral deposits, good farm lands, and immense forests of valuable hardwood. You may wonder why so much of this great country is so sparsely populated. There are several reasons and they go all the way back to the early settlement of the country.

Washing diamonds from clay found in the gravel in a stream in the interior of Brazil.

TISSOT FROM CUSHING



Brazil on the Map

On your classroom globe notice that Brazil lies east of New York City. The eastern tip of Brazil is closer to Africa than is any other part of the western hemisphere. This location on the continent gives Brazil an important advantage. Airplanes from northeastern Brazil can easily reach the African coast. From there, airplanes connect easily with Europe. Ocean ships can travel by direct routes between Brazil and the leading ports of Europe and North America.

A highland country. The map of South America (page 56) shows you that Brazil is made up almost entirely of highlands. What highland do you see north of the Amazon River, forming nearly all the northern land border of Brazil? What immense highland do you see south of the Amazon? Where are plains found in Brazil? Notice that the Amazon Lowland becomes narrower as the river approaches the sea. Finally the river winds between the highlands over a narrow ribbon of flood plain.

Notice also that the highlands of Brazil extend close to the sea except in the area around the mouth of the Amazon. Brazil has no coastal plain similar to that on the east coast of the United States. The highlands are made up of hills and low mountains with some large areas of plateau. Locate the ranges of low mountains in southeastern Brazil. A little northeast of the great city of Rio de Janeiro is the highest peak in the country. What is its name? It is less than ten thousand feet high.

The Great Escarpment. The city of Rio de Janeiro is located on a narrow

coastal lowland just below the great Brazilian Highland, which rises to the north and west of the city in a steep wall-like slope. Such a steep edge of a highland is called an *escarpment*, and this one is spoken of as the Great Escarpment because of its great height and length. The Great Escarpment extends along the coast from the city of Salvador southward all the way to the city of Pôrto Alegre. From the sea it looks like a mountain range.

Most of the escarpment rises in a series of steps, but at two places a single slope faces the sea. One of these, the part of the Great Escarpment in the state of São Paulo, is known as the Serra do Mar, a name that means "mountains of the sea." Locate the Serra do Mar on the map. Below the steep slope lie *lagoons*, or small, shallow ponds, filled with green thickets of trees. Along the shore are long, curving beaches of white sand.

It is difficult to reach the Brazilian Highland from ports on the lowland. Most of the passes over the Great Escarpment are more than 3,000 feet above sea level. Only one pass, north of Rio de Janeiro, is as low as 1,500 feet. What does this mean for transportation to and from the interior?

Rivers of the highlands. In what parts of the Brazilian Highland do most of the rivers have their sources? The chief rivers flow inland away from the coast before turning toward the sea or joining the great rivers that flow toward the sea. The rivers do not provide routes from the highlands to the sea. Also, wherever they come to the edge



of the highlands, they drop over it in great falls or many rapids.

Different climates in Brazil. Notice on the map that Brazil lies almost entirely in the low latitudes. Trace the equator across the northern part of Brazil. What is the latitude of the southern tip of Brazil?

Brazil does not have an extremely hot climate. Remember that the highest temperatures in the world do not occur near the equator. Rather they are found in the deserts more than thirty degrees of latitude from the equator. In Brazil

near the equator the temperature is seldom so high as during a hot summer day in the middle latitudes.

The rainfall map, page 61, shows that Brazil has some regions with more than eighty inches of rainfall. How many such regions can you locate? Which is the largest? Only a small part of the country, in the northeast, receives too little rainfall for farming. Here the rainfall cannot be depended on. During some years there are drouths; during others, floods.

In most of Brazil there is a summer



HESS FROM CUSHING (LEFT) AND JAMES SAWDERS—COMBINE

On the left are miners' houses north of Santos. The vegetation is forest and grassland mixed. On the right is a rain forest near the east coast. Notice the hut in the clearing.

rainy season from October to March, and a winter dry season (maps, page 72). But here again in such a large country we find differences. In the Amazon river basin the rains come mostly from January to June. The other half of the year is less rainy but is not dry enough really to be a dry season.

Plant life. From a study of the vegetation map on page 63, would you say that forests cover much of Brazil or only a small part of it? What parts of Brazil are heavily forested?

The forests of Brazil are not all alike. In regions of heavy rainfall, such as the Amazon river basin, there are immense stretches of tropical rain forest. Such a forest consists of broadleaf trees that are evergreen. A part of the forest containing many trees of the same kind is seldom found. Instead there is the greatest mixture of trees. As many as three thousand different kinds have been found in a single square mile of forest. The trees grow to a great height, and their branches are so laced together overhead that very little light ever reaches the

ground. Therefore, almost no bushes or other plants grow between the trees.

In places where it is neither so rainy nor so warm as in the river basin of the Amazon, we find a forest of smaller trees. Some of these lose their leaves during the dry season. Since in these areas light reaches the ground, small bushes and other plants grow between trees. Because of the thick tangle of bushes this kind of tropical forest is much harder to travel through than the rain forest and is the kind of forest often called a *jungle*. You should remember that most of the great forests of Brazil are tropical rain forests, not jungles.

Even though Brazil contains the world's largest area of tropical rain forest, the greater part of the interior consists of forest and grassland mixed. Find these areas on the map. The grasslands are often so mixed with scrub forests that it is impossible to tell where one ends and the other begins. Scrub trees are often scattered over the grassland, and the scrub forest includes many grassy areas.

The streams that pass through these

grasslands and forests are lined with trees, either evergreen or deciduous. Often the trees grow so thickly that they form walls along the banks of the river. It seems to flow through a huge, dark tunnel.

Two kinds of vegetation that belong to the middle latitudes are found in the southern part of the country. One of these is the prairie with its tall grass. Prairie grass is found in areas that, at least every few years, have freezing temperatures in winter. Also in the south, where there are frosts, grow forests of pine and broadleaf, deciduous trees.

Uses of the land. From these different kinds of vegetation you can tell much about the ways in which the land can be used. The prairie grass of southern Brazil provides better grazing than does the coarse grass of the Orinoco savannas. The vast areas of tropical forests and grassland mixed have soil that is poor for farming. The poorest soils of all are in areas of tropical rain forest. The heavy rains soaking into the ground

year after year have carried away most of the minerals that plants need for food. Brazil does not have much good farm land.

Cities. As you have seen, the majority of the Brazilians live close to the coast. Here are the largest cities. Transportation by sea from one coastal city to another is easy. But transportation is difficult from the coastal cities to the interior of Brazil. It is especially difficult for cities located between the Great Escarpment and the sea. Find such a city on the map.

On the map find a Brazilian city situated at the mouth of a river that has its source far back in the interior. Other cities are found at sheltered spots along the coast. See whether you can find in the interior a city to which products gathered from the forests are brought for shipping out by way of a river.

Regions of Brazil. In studying this large country we shall look at five different regions. They are outlined and named on this map. Briefly they are

A river town north of Rio de Janeiro. Cacao is brought from plantations by pack train over forest trails. From here it is shipped downstream to a seaport and then to Salvador.

EWING GALLOWAY





the Backlands, far back in the interior, and then (going from south to north) the South, the Southeast, the Northeast, and the North.

THE BACKLANDS

We shall call inner Brazil south of the Amazon basin the Backlands. This is a huge area, for Brazil as a whole is larger

than the United States, and this region covers a large part of Brazil. It is a region of forest and grassland mixed. Few people live here. The small villages are separated by many miles of country that has no inhabitants and is used only for the grazing of cattle. This is the great wilderness that you read about on page 179.

THE SOUTH

Notice on the map that the South begins at the border of Uruguay and extends north and east to the state of São Paulo. It includes all the country to the west as far as the borders of Argentina and Paraguay. This part of Brazil is much like southeastern United States. It has hot summers and mild winters with frosts in the southern part and on the highlands.

The population map on page 11 shows you that the South has three well-populated areas. The most southern of these three areas has about three million inhabitants. The other two have about a million each. As in other regions of Brazil, the land inland from these three settlements and between them is thinly populated.

Early settlers. In colonial days bands of Portuguese traveled southward from São Paulo to the shore of the Plata. They found a great zone of pine forests mixed with patches of prairie extending across the highlands. Along the coast was a tropical forest. These pioneers had not been used to forested areas in their homeland, and they always pre-

ferred the prairies. Many of them settled south of the valley of the Uruguay River. Here the forest gives way to prairie, which extends all the way across Uruguay and deep into Argentina.

The pioneers noticed that the summers of the South were much like those in the tropics. However, the winters were cooler, and there were, therefore, fewer dangerous insects. Rains all year round kept the prairies green.

These settlers might have used this prairie land to grow wheat, corn, and cotton, and it might have become a great farming region. But instead they used it for grazing animals, for they were used to stock raising.

The grazing lands. Today the prairies of the South are still used as pastures. Cattle and sheep roam over large estates. Though the cattle have been improved by mixture with better breeds, they are descended from the scrub cattle of colonial days. They are marketed chiefly for hides, tallow, and beef. There is a great difference between these herds and the fine pure-bred Herefords of Uruguay.

Use of the forested area. You saw on the map the three thickly-settled parts of the South. All these lie not on the

PHILIP GENDREAU, N.Y.

Many of the old estates in southern Brazil are now used chiefly for raising cattle. The owners' mansions are surrounded by trees.





HESS FROM CUSHING

On some farms in Brazil rice is harvested by hand. This method is slow and requires many more workers than harvesting by machine.

prairies but in the forested area, and have been settled only within the past hundred years. The first settlers were mostly German immigrants who knew how to lay out farms in a forested land. They cut down the trees and left the stumps to rot or to be burned, much as did the early settlers on our own Atlantic coast. Other immigrants, Italian and Polish, followed the Germans. In many other parts of Brazil you see mud houses with tile roofs, but in the South the houses are of wood or brick with wooden roofs.

The people include many small farmers who own their own farms and raise crops of different kinds. If you visited these areas, you would see neatly laid-out farms, quiet villages, and some large cities such as Pôrto Alegre. Large estates with tenant farmers are not usual except on the rice lands.

A rice region. Just south of the Brazilian Highland the Rio Jacui, which has many short branches, flows eastward through a lowland. Long after the arrival of the herdsmen, settlers of Portuguese descent came from other parts of Brazil to live on the flood plain of the

Jacui. As you might expect, these farmers laid out large estates and used tenant workers. Today they grow rice as their chief commercial crop.

This region receives its heaviest rains in winter, the wrong time for rice. Therefore, some of the landowners have built small private reservoirs to store the water until summer. Other landowners have no reservoirs and must depend on the moisture left from the winter floods. What advantage might there be in building public reservoirs, canals, and drains, instead of private ones?

This rice-growing region supplies an important part of the food for the people of Pôrto Alegre as well as for other parts of Brazil.

German villages. In the well-settled parts of the South are villages built by German immigrants. The villagers make their living by mixed farming and cultivate their land with great care. They raise chiefly corn and hogs. The corn is fed to the hogs, which can be sold for more money than corn will bring. The farmers also grow rye and potatoes. In one small area is one of Brazil's chief tobacco-growing districts.

Italian villages. One also finds villages occupied by people of Italian descent. You can easily tell these villages from the German ones by the vineyards that have been planted over the rounded hills. From the vineyards on these farms come more than nine tenths of the grapes produced in Brazil, and a large part of the wine. However, Brazil is not an important wine-producing country.

Pôrto Alegre. The city of Pôrto Alegre is a large commercial and industrial center. Herdsmen and farmers living in the surrounding area send their products there. Hides from the ranches are tanned and made into leather. Wool is made into yarn, cloth, and garments. In Pôrto Alegre there are also breweries, wineries, and food industries, all depending on raw materials from the surrounding area. The people of this area also buy manufactured products and imported goods from Pôrto Alegre. We say that the area which Pôrto Alegre serves in this way is the *hinterland* of Pôrto Alegre.

Raw materials reach the city by river, but surplus products are exported by railroads connecting with Argentina and Uruguay. Pôrto Alegre is an inland center, even though on the map it may

look like an ocean port. The lagoons on which it is located are too shallow for ocean steamers.

Coal for industries. The factories in Pôrto Alegre and in many smaller towns use coal to supply power. This is Brazilian coal, for in the South are two important coal-mining districts. Coal from one of these, a short distance south of the Jacui, goes to Pôrto Alegre chiefly by river barge. The other field supplies coal for the coke used in Brazil's steel industry in the Southeast.

Forest products. The pine forests of the South furnish lumber for building purposes and pulpwood for the manufacture of paper. Busy lumber camps have grown up in the pine forests. Some of the wood is made into charcoal, the chief fuel used in Brazil.

Scattered through the pine forest are trees, the leaves of which are used for maté. Every year between March and September workers go into the forests to strip leaves from these wild trees. The leaves are dried over small fires. Then they are carried, often by motor truck, to the nearest railroad, which transports them eastward to the city of Curitiba.

Land for new colonies. You have learned that the three most densely popu-

PHILIP GENDREAU, N.Y.

Maté gathering in southern Brazil. In one wagon is maté brought from the forest. In the other are bags of maté being sent to market.





São Paulo. Not far inland from the coast of southern Brazil is the beautiful, modern city of São Paulo, the second largest city in the country. It is not a port city but is situated on the Brazilian Highland almost three thousand feet above sea level and thirty-five miles inland from the Atlantic Ocean. São Paulo has more than a million inhabitants, and it is still growing.

If you were to travel by steamer along the coast of southern Brazil, you would notice the Great Escarpment, which looks like a mountain range rising steeply from the coast. However, if you viewed this part of the country from an airplane, you would see that this is not a real mountain range but the sharp edge of a great upland. São Paulo is located on this upland. Between the escarpment and the sea lies a narrow, wet lowland.

A very rainy region. On slopes of the Serra do Mar, between the city of São Paulo and Santos, its port, the rainfall is over 150 inches a year. The weather is cloudy and rainy most of the time. São Paulo itself has 56 inches of rain a year. Warm, humid air from the east brings heavy rainfall as it rises to cross the highlands.

Plan of the city. With its tall skyscrapers and crowded, noisy streets, São Paulo looks much like our cities. It is built on the gently rounded hills of the upland. It overlooks the broad valley of the Rio Tietê, a stream that begins at the very crest of the escarpment and winds and twists about as it flows inland. This river valley is often flooded during heavy rains, and that is why the city was situated on the bordering hills.

On this map find the business district of São Paulo. It lies on the lower slopes of the hills on the southern side of the

lated parts of the South together have only about five million people, about the same number as live in the metropolitan area of Chicago. However, the population of the South is rapidly increasing. People with the pioneer spirit are moving away from the crowded areas and starting new communities. Of all Brazil this forested section is the most useful area for new colonies. It is near enough to the coast so that good roads can be built and kept up, and land can still be bought by settlers at low prices.

THE SOUTHEAST

The Southeast is the most productive part of Brazil. On or near its coast are two great cities, Rio de Janeiro and São Paulo. The Southeast contains most of the mineral wealth of the country, and its manufacturing industries have been best developed. These industries include the largest steel plant in Latin America. The region is also known for its coffee and other farm products.

Rio Tietê. Because of the pattern of the streets, this district is called the Triangle. Most of the factories are in the level valleys or just above, usually near the railroads. Many of the old downtown streets are narrow, but broad avenues lead from the Triangle to other districts. Scattered through the city are costly public buildings, as modern as you would find anywhere in the world.

A manufacturing center. São Paulo is the largest manufacturing city in all Latin America. Of its different industries the manufacture of textiles is the most important and one of the oldest. Over a third of the workers of São Paulo make their living by spinning and weaving cotton, wool, or some other fiber.

Raw cotton for the factories comes from near-by farms. The cotton textiles are of all kinds, from coarse weaves such as canvas to weaves so fine as to seem almost like silk. But many of the machines used in the cotton mills are old and slow. Lack of modern machinery keeps the cost of cotton goods high.

The manufacture of rayon and silk is becoming more and more important in São Paulo. Some of the raw silk is produced in Brazil itself, which is the only producer of silk in Latin America. The rest of the raw silk needed is imported.

São Paulo is one of the world's leading producers of textiles. In the warm climate of Brazil there is much demand for linen clothing. Woolen textiles, which make warm clothing, are manufactured only in small quantities. Woolen garments are worn chiefly in the high interior and in the South where the winters are cold.

In addition to cloth, the factories make clothing, table and bed linen, and leather products. Shoes and boots are produced

at low cost. In an ordinary Brazilian shoe shop you can find footwear made from many different kinds of material such as fishskin, pigskin, snakeskin, alligator leather, kid, cloth, or patent leather.

Second only to the textile industry is *metallurgy*, together with the manufacture of machinery. Metallurgy means working with metals, particularly separating them from their ores and combining them into useful *alloys* (an alloy is a metal made by mixing other metals). São Paulo's factories make articles of iron and aluminum, including small machine parts, stoves, and metal furniture. Most of the raw materials are imported.

The chief mineral resource of Brazil is iron ore. The country has about a fifth of all the known supply of iron ore in the world. Recently a great steel mill has been built at Volta Redonda on the main railway line between Rio de Janeiro and São Paulo city. Here the Brazilians are producing a large part of the iron and steel they use.

The silk worms in Brazil produce large cocoons from which strong silk is obtained.



The chief food factories in the city do not preserve fruits, vegetables, or grains as you might expect. Even though the hinterland of São Paulo is the great farming center of Brazil, the most important food factories in the city are packing houses. Some factories prepare *jerked beef*, for which there is a great demand in the interior and among the poorer people. To make jerked beef the meat is cut into thin slices and dried. It will then keep a long time.

Other manufactured products of São Paulo are flour, beverages, cement, leather goods, glass, paper, rubber products, lumber, and furniture. Most of the automobiles and motor trucks now used in Brazil are assembled near São Paulo.

Not many manufactured products are sold in the interior. The majority go to people either in São Paulo city itself or in other cities of Brazil. Transportation to

the scattered communities in the interior is so expensive that people living in the little towns, often far from a railroad, cannot afford to buy products from São Paulo. Many of these towns have their own small factories, which make furniture, clothing, beer, and other articles for the small neighborhood markets.

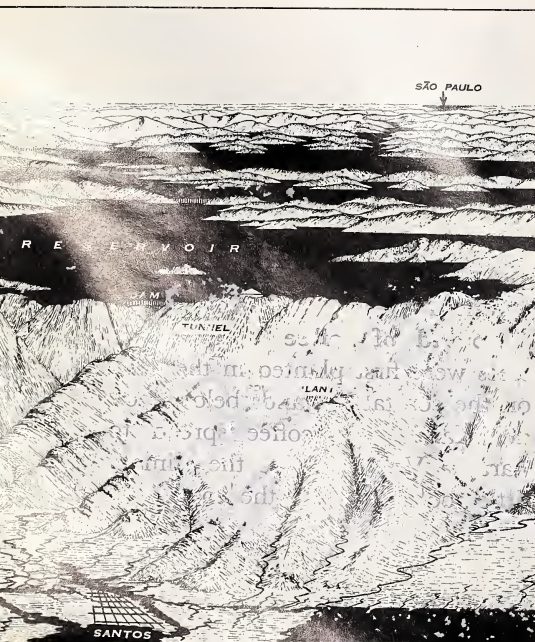
Power plants. Brazil has only enough coal and petroleum to supply a small part of the power needed for its industries. Most of the power used is electric power generated at waterfalls in the region. Power obtained in this way is called *hydro-electric power*. *Hydro* means "water." Therefore hydro-electric power is electricity generated by water power.

The largest hydro-electric power plant in South America is at the foot of the Serra do Mar, a few miles northwest of the city of Santos. At the crest of the Serra do Mar a huge reservoir has been built overlooking Santos. This reservoir is filled partly by drainage from the heavy rainfall.

The engineers who built the power plant were able to generate electricity by using water from the inland-flowing streams west of the escarpment. After pumping water from the streams into the reservoir, they let it flow over the escarpment to fall more than two thousand feet through pipes to the power plant. Imagine the work that could be done every minute by 280,000 horses, each pulling as hard as it could. That, 280,000 *horse-power*, is the amount of power created by the water as it drops through the several pipes to the whirring generators.

It is from this plant that São Paulo obtains almost all of the power used in its industries. The plant also furnishes electricity to homes in Santos and in neighboring towns. It moves the streetcars,

Power plant above Santos. Water drops from the reservoir, through a large tunnel to a concrete tank, and then through four pipes to the generators in the power plant.





JAMES SAWDERS—COMBINE

São Paulo seen from a residential section above the downtown district. Notice the modern buildings, the excellent roads, and the hillsides planted with shrubs and flower gardens.

and even the telephones depend upon it for their service. Furthermore, by adding more pipes and generators, the plant can be made to generate a million horsepower.

Other, smaller power plants in Brazil generate electricity cheaply at waterfalls, of which Brazil has many. In the state of São Paulo every small town has electric power. Many villages and thousands of farms and plantations are supplied with electricity. Of course, not all of Brazil's waterfalls are used. Some are hard to reach or are too far away from the centers of population to be useful in furnishing power.

Rapid growth of Sao Paulo. If you saw São Paulo today, you could hardly believe that about a hundred and fifty

years ago it was just a little town like the others around it. It was located in a thinly populated cattle and farming country. Its streets were narrow and crooked, and few were paved.

Maps of the region show little reason for the growth of this small town, for it was not laid out in an especially good location. However, by reading the story of coffee planting in Brazil, we shall learn that São Paulo has developed rapidly because of the great plantations that have sprung up in the near-by highlands.

Coffee planting. Coffee was first planted in the Southeast of Brazil in the lowlands near the Serra do Mar. Then it was moved to the Paraíba Valley, where the climate is a little cooler than on the coast. On the



map on page 181, locate the Rio Paraíba north of Rio de Janeiro.

The production of coffee requires a large number of workers. There must be laborers to plant the seeds in seed beds, to plow and harrow the fields, and to set out the young plants in rows. The ripe coffee berries must be picked, cleaned, dried, and prepared for market. As more and more coffee trees were planted, the landowners began to need laborers.

One São Paulo landowner brought to his estate eighty families of German peasants. These became his tenants and worked his plantation. Other planters began to rent parts of their land to European immigrants. Soon thousands of immigrants—chiefly Italians, Portuguese, and Spaniards—had come to the

region to work on the coffee plantations, or *fazendas* as they are called.

The landowners had the tenants clear away the forest and plant more and more coffee trees. Coffee planting quickly spread over a large area north and west of the town of São Paulo.

For a few years after a tenant family arrived, it grew its own food crops between the rows of coffee trees. When the trees reached bearing age, the tenant turned his part of the plantation over to the owner and moved somewhere else. During the time he cared for the coffee trees, he was paid only enough wages to live on. The plantation owner kept most of the income from the sale of the coffee.

In time the São Paulo region became the most prosperous part of Brazil. To-day half of Brazil's millions of coffee trees grow here. The map on this page shows that this is Brazil's largest coffee-growing region. Every year it supplies almost half the world's coffee.

A coffee fazenda. Imagine you are visiting the Fazenda Chapadão, about sixty-five miles northwest of São Paulo city. It is a bright autumn day in May, and the busy coffee-picking season is beginning. The tenants—men, women, and children—are stripping the fruit from the branches of the coffee trees. They pick both ripe and green berries at the same time. The busy pickers drop the berries into round wire-mesh trays hanging from their necks.

The tenants have kept the coffee plantation in good order. The dark-red soil is free from grass and weeds. On the ridges and slopes are long, straight rows of coffee trees as far as the eye can see. Altogether 620 of the 4000 acres of land are used to grow coffee. The rest is not

suitable because of poor drainage or danger of frost. Some of this poor land is used by the tenants to raise rice, corn, and beans, or to provide pasture for their animals.

All the fazenda and its surroundings can be seen from the highest ridge of the property. This overlooks the market city of Campinas, lying in a valley. Toward the southeast are the motor road and railway that connect with São Paulo. The port of Santos, where ships wait for cargoes of coffee, is a little more than a hundred miles away.

Fazenda Chapadão is more than eighty years old. It occupies the valley of a small stream. The buildings are near the stream, and the coffee trees are planted on the slopes and ridges above the valley. In the bottom of the valley is a long, narrow reservoir formed by a dam which has been built across the stream. Here the berries are washed.

East of the reservoir are rows of small houses, white against the green of the trees. These are the homes of the tenants who work on the fazenda. On the opposite side of the valley at its upper end is the manager's offices and his large, comfortable house. In the lower valley and west of the stream is a wild woodland that supplies the fazenda with fuel and timber.

Growing coffee is the main occupation on this fazenda, but the owner also grows fruits to increase his income. Sixty acres on a lower slope produce oranges, pears, peaches, mangoes, grapes, pineapples, and grapefruit. The owner has found that oranges can be grown successfully and sold to other Latin American countries as well as to Europe.

As on most of the fazendas and smaller coffee farms of the Southeast, only a

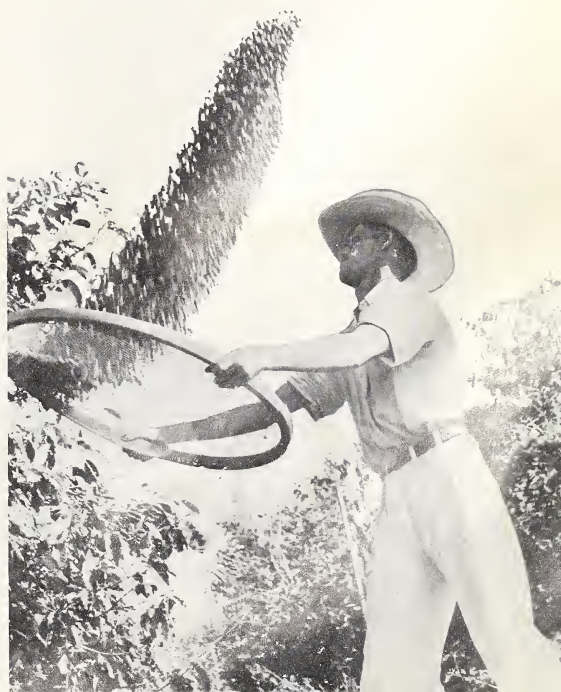
small part of the land is used for coffee, but it is the chief money crop of the fazenda. After it has been gathered and prepared for shipment or storage, the bags of coffee are sent by railroad to the port of Santos. How does this compare with the way coffee is shipped in Colombia?

Reasons for the growth of São Paulo.

As coffee fazendas such as the Fazenda Chapadão developed in this region, the city of São Paulo grew larger. Until a few years ago, the only railroad from the hinterland to Santos went through São Paulo. Bags of coffee in great numbers entered the city on their way to Santos and from there to world markets. Other products of the surrounding region were also brought to São Paulo for shipment to Santos. New industries developed, such as those you have read about, to supply the city people with both necessities and luxuries. Laborers from other parts of

Coffee berries are cleaned by tossing on screens; wind blows leaves and dirt away.

HESS FROM CUSHING



the highlands flocked to São Paulo to work in the factories. As we have seen, the factories have the advantage of obtaining electric power cheaply. Gradually São Paulo developed into Brazil's greatest industrial city.

Santos and the coffee trade. The rainy city of Santos is the most important coffee port in the world. Though it is only about forty miles from São Paulo, the automobile highway and railroad connecting the two cities must climb more than 2500 feet to reach the highland.

This great coffee port has three miles of concrete wharves. Along them are more than twenty huge coffee warehouses, and farther from the water front there are many more. Inside the warehouses are usually stored more than two million bags of coffee.

Motor trucks and large wagons drawn by oxen, horses, mules, or donkeys bring the heavy bags of coffee to the docks. Lines of workmen lift the bags from the trucks or wagons and load them onto *conveyors*, or endless belts, which carry the coffee down into the hold of the ship. With modern machinery driven by electricity, several thousand bags of coffee are easily loaded in an hour.

Brazil successfully grows many important crops, such as corn, cotton, beans, rice, and tobacco, but the coffee industry brings more trade with foreign countries than all the other farming industries put together. The United States is by far Brazil's best coffee customer.

Rio de Janeiro. The capital of Brazil, one of the most beautiful cities to be found anywhere in the world, is also in the Southeast. Rio de Janeiro lies along the southwestern shore of Guanabara Bay and is bordered by a range of steep, rocky hills. Guanabara Bay is an ex-

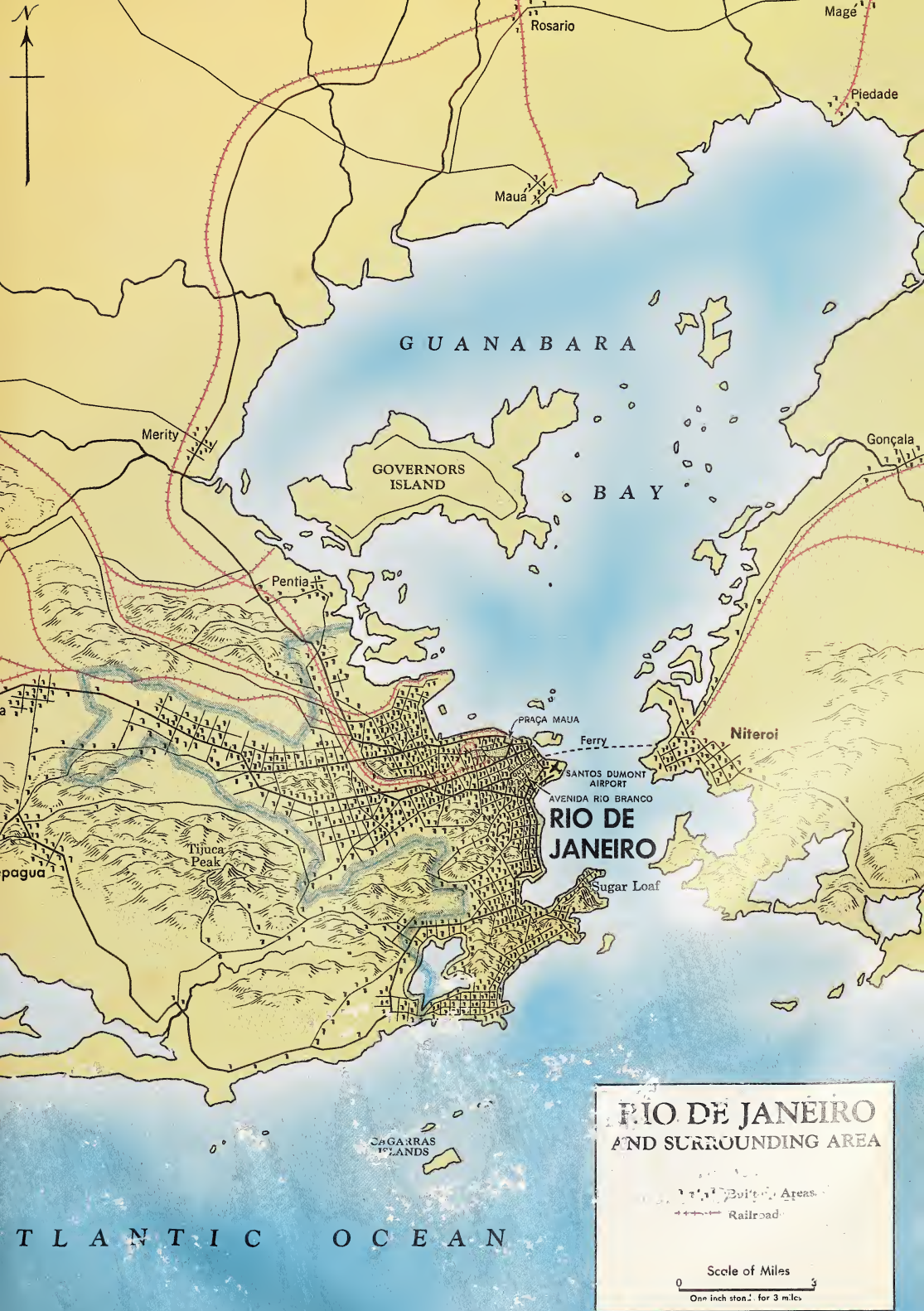
cellent harbor. It is almost twenty miles long and nearly sixteen miles across at its widest point. Its shore line is ninety miles long. More than a hundred islands dot the harbor.

Plan of the city. This map shows you the plan of Rio de Janeiro. Find the entrance to Guanabara Bay. Where are the hills which lie beyond the city? Find the business district bordering the coast. From the business district, railroads go to the foot of the Great Escarpment and then climb up the steep slopes to the highlands.

When a steamer puts into a dock in the harbor, the visitor steps down the gangplank into the Praça Maua, a beautiful little park. Locate this *praça*, or square, on the map. Next find the broad Avenida Rio Branco, the main street. Evenly spaced shade trees line each side of this street.

Crossing the Avenida Rio Branco at its midpoint is the Rua do Ouvidor, which means, "street of the judge." This old street is one of the most famous shopping centers in South America.

Rio de Janeiro has become a modern city only since 1904. At that time the new city was planned and work was begun. Old buildings were torn down, new streets were laid out, and sea walls were built along the water front. A hill in the downtown district was removed to make space for new office buildings. The earth and rock from the hill were used to fill in a shallow part of the bay near by, and here Rio's airport is located. Today, lofty skyscrapers of the business section overlook the bay. Some distance west of the chief business section is an important factory district, though factories are found here and there in other parts of the city. There are also hotels,



GUANABARA

BAY

GOVERNORS
ISLAND

SANTOS DUMONT
AIRPORT

AVENIDA RIO BRANCO

RIO DE
JANEIRO

Sugar Loaf

Niterói

JAGARRAS
ISLANDS

RIO DE JANEIRO AND SURROUNDING AREA

Build-up Areas
Railroad

Scale of Miles

0 3
One inch stands for 3 miles

ATLANTIC OCEAN

museums, an opera house, and new government buildings. The old buildings put up in the early days stand back from the water's edge in the older parts of town.

A commercial center. Both domestic and foreign trade come to Rio de Janeiro by sea. The port is centrally located to handle much of the domestic trade of Brazil. Goods reach "Rio" by sea from communities along the Amazon and from the northeastern and the southern coasts of Brazil. Since land transportation in the interior is difficult, many kinds of goods are transported by coastal steamers. Almost half the imports from foreign countries enter Brazil through Rio de Janeiro. Some of these then go by sea from the capital to ports in the north or south.

The growth of Rio de Janeiro into a large city having nearly two million people has come about partly because it is the center of commercial activities for Brazil. It is located about in the middle of the east coast, where the great majority of Brazilians live.

The capital. In Rio, the capital of the United States of Brazil, much of the work of governing the largest country in South America is carried on. Many of the leading men from other parts of the country come to Rio to take part in the government.

A manufacturing city. Brazil produces more of its own manufactured articles than does any other Latin American country. Although a large part of Brazil's manufacturing is carried on in São Paulo, Rio de Janeiro does some of it. The factories in Rio supply its shops with clothing, shoes, furniture, foodstuffs, and many other products used in people's homes.

Work of Oswaldo Cruz. The modern part of the city is spotlessly clean. It is hard to believe that as late as 1895, captains of ships leaving Argentina had to promise passengers that they would not dock at Rio de Janeiro. Everyone feared to go anywhere near that city because it was a hotbed of yellow fever, which had raged in Brazil for more than forty years.

In 1904 Dr. Oswaldo Cruz, who had been named minister of public health, promised the president of Brazil that within three years he would clear the city of yellow fever. Cruz knew that he must wipe out a kind of mosquito that carries germs of yellow fever. Nearly three years after he had made his famous promise, he reported to the president that there were no more cases of yellow fever in Rio. He had done for Rio what Gorgas did for the Canal Zone. Today Rio is a healthful place in which to live. There are no screens on windows in the city, for they are not needed. Every day, uniformed sanitary squads inspect the streets, gardens, and buildings for standing water. Water left standing for twenty-four hours can become a breeding place for the fever-carrying mosquito.

Land transportation. Both Rio and São Paulo are railroad centers. On the map on page 195 count the number of railroads that enter Rio de Janeiro. Notice that they serve the entire Southeast. However, their rates are so high that much Brazilian produce is still transported by mule or oxcart.

Most of the railroads are single-track lines, cheaply built and badly kept up. The roadbeds are winding, and the grades are steep. The engines, most of which burn wood to furnish power, puff heavily as they clatter noisily along, stirring up clouds of dust and scattering



ALAN FISHER FROM CUSHING

A river boat and a seaplane on the Amazon at Manaus. Regular passenger air service is provided up and down the river. Why are seaplanes used instead of land-based airplanes?

showers of sparks. Nor do these railroads connect with all the important towns; some towns built on the steep, old colonial roads have no railroad service.

There are at least two reasons why the railroads do not give better service. Many towns in the Southeast have only small quantities of goods to send to market. And the railroads do not have the business of all the towns.

A system of paved highways through the Southeast is now being planned. After it has been completed, motor trucks will provide cheap transportation for many communities that are today separated from the outside world.

Air transportation. A few minutes' drive from the business district in Rio de Janeiro takes you to the Santos-Dumont Airport. It is a fine, modern airport, with docks for seaplanes, and is one of the most centrally located airports in any large city.

Twice a day planes from Miami,

Florida may be seen leaving or arriving at the airport. Other planes leave Rio de Janeiro to transport passengers and mail to Buenos Aires and to connect with lines on the west coast of South America. Airlines from Rio reach Europe by way of the city of Natal farther north and thence to Africa. From Rio, airplanes fly to many Brazilian cities, both coastal and inland. Great flying boats come to rest in Guanabara Bay, and passengers step down to landing platforms as if from an ocean liner. Air transport in the Southeast helps to make up for the want of other good means of transportation to the interior.

Fazendas. Just north of Rio de Janeiro are large fazendas, each many square miles in area. The homes of the owners and workers are scattered far apart and are usually in the valleys. Although most of the tenant workers live in the valleys and grow their crops on the hillsides, the chief routes of travel are on the upland. Thus to a traveler the land

seems thinly settled, for he passes through great upland areas used only for pasture. If he wants to see people, he must go down into the valley.

Notice on the map, page 184, that much of the countryside of the Southeast is used to pasture cattle, both beef and dairy animals. Dairy cows are raised in districts from which milk can be taken to Rio de Janeiro by road or railroad in not more than eight hours. But on most of the pastures of the Southeast the cattle are raised for beef. They furnish the cities with a steady supply of fresh meat. Brazilians prefer their meat fresh and not aged after slaughtering.

On most fazendas some of the land is used to grow food for the people living there. Tenants often pay a small amount for the use of the land or give part of their crops to the landowner. They raise corn, rice, beans, bananas, and manioc. After two or three years, when the soil shows signs of giving a poor yield, the tenant finds a new garden spot.

The land on these fazendas has not always been used for pastures as it is today. Once many of the estates raised sugar cane to sell. When the soil no longer gave a good yield, the workers turned their fields back into cattle pastures. Later, landowners thought they could make money by planting coffee trees. When the coffee crop brought less profit, many of the fields again became pasture land for cattle. Other commercial crops such as oranges have also been given a trial, but in most cases people have returned to using the land for grazing.

Large numbers of animals have been pastured on the same land year after year. As a result, the grass has not had time to reach its full growth and has even

died out. In many sections of the Southeast the fazendas have been cleared of all trees. Without trees or plants to hold the moisture in the soil, immense quantities of topsoil have been washed away by the rains.

Villages. Not all the workers live on the fazendas; many of them reside in small villages. These are all somewhat alike. In the center of the settlement usually stands a church, which faces a small praça crossed by well-worn paths. Houses are built close together around the edge of the praça. In some of the larger villages the houses line the roads leading to the church. The houses are made of mud plastered over a frame of poles, with pounded earthen floors and tile roofs.

Modern and primitive methods. You should keep in mind that the modern parts of Brazil are near the large cities. As you leave the cities and go toward the interior, there is a wide band of farm land where slow, primitive methods are used. You see farmers using hoes and digging sticks rather than plows and tractors. Still farther inland is a broad band of country whose people depend for their living on herds of cattle. Here the people live simply, as their ancestors have for centuries. Farthest inland, as we shall see later, are the forests, in which Indians live by hunting and by collecting forest products.

As you go inland, paved highways and automobiles give way to rough trails, oxcarts, and pack horses. Great hydroelectric plants give way to small generators that are driven by gasoline engines and are hardly large enough to light a small village. These in turn give way to kerosene lanterns and the light of the campfire.



EWING GALLOWAY

A farmhouse in the interior of southeastern Brazil. The oxen are used in place of pack-horses to carry firewood. Why are they not used to pull oxcarts loaded with wood?

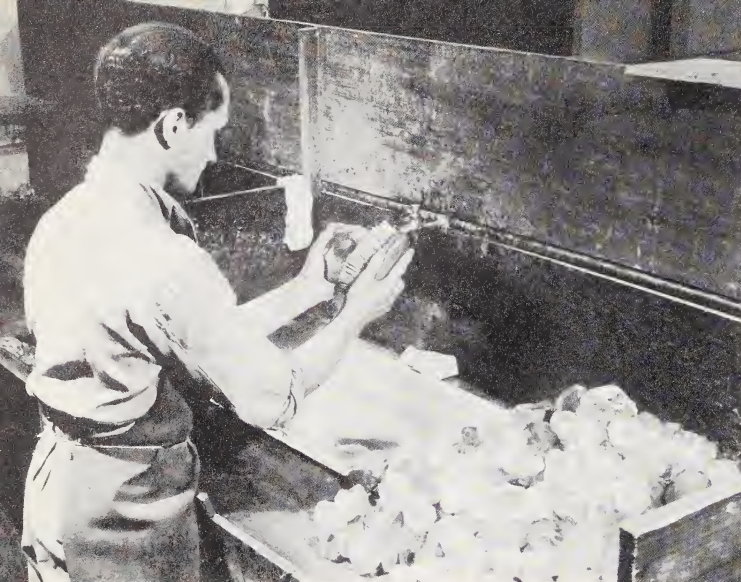
Fire farming. A wasteful method of farming is used in all the farming sections of Brazil except the crowded sections near the seacoast. You saw on the vegetation map that most of the country is covered with trees and thick underbrush. Such land has to be cleared before it can be used for farming. The farmers cut down the trees, clean out the brush, and then burn them both. Afterwards the farmers plant their crops, chiefly corn, manioc, rice, and beans. The rice is grown on dry land and is not irrigated as are the rice fields of China or those of South Brazil. It grows well only if the rainfall is heavy. During years when there is less rain than usual, the rice crop fails.

The fire farmers do not fertilize the land or care for it in order to obtain large crops. After one or two crops have been harvested, weeds are allowed to spring

up over the fields. The farmers leave the land for several years until brush and young trees cover it again. Later, clearing and burning are repeated.

Such fire farming destroys much valuable timber. It takes plant food from the soil. By using a plow and modern methods of cultivating the land, some farmers could get larger harvests with less work. But most of the land could not be farmed with plows. Steep slopes can be cultivated with a hoe, but if the land is plowed, the rain quickly washes the soil off the slopes.

Minas Gerais. The land in Southeast Brazil is useful not only for farming and ranching but for mining. On the map on page 184, find the large state that lies just north of Rio de Janeiro. It contains a rich store of mineral wealth and covers most of the Southeast. This state



JAMES SAWDERS—COMBINE

Quartz crystals are washed and inspected before they are shipped to the United States. Large crystals that are clean and free from cracks are needed for radio equipment and, therefore, usually bring high prices.

is Minas Gerais, which means "general mines."

Gold mining. Gold was first discovered in the state of Minas Gerais more than a hundred fifty years ago. People flocked there from all parts of Brazil, and the country quickly became the leading producer of gold in the world. The gold was obtained by *placer mining*, that is, by washing the gravel or sand from the hillside or riverbank or stream bed. The gold-bearing material was washed in a trough or pan, and the gold, being heavy, sank to the bottom while the earth was carried away.

Gold occurs also in veins of *quartz*, which is a white or pinkish mineral that is often found in clear, thick crystals. The gold appears in pure form in flakes or lumps through the quartz. As rivers wear down the surface of the land, the veins are exposed, and the gold is washed into the stream gravels. Therefore, if there are gold veins in a mountain region, gold flakes and lumps of gold called *nuggets* are likely to be found in the gravels of the streams leading out of the region.

The gold miners of Minas Gerais worked over the streams and hillsides thoroughly. Today there are lonely wastes and badlands where the earth, torn up in the mad search for gold, was left a barren area of roots and pebbles. This gold rush is an example of the way in which people have flocked to parts of Brazil in search of quick wealth.

Today gold is still being produced by placer mining, but there are also some mines that follow the ore veins far underground by means of shafts and tunnels.

Iron. Billions of tons of iron ore are found in the southern and the eastern parts of the Serra do Espinhaço. Locate these mountains on the map on page 184. This ore is very rich in iron—richer than most of the iron being mined today in Europe and in North America. It lies so near the surface of the ground that it can be scooped up from great open pits. Expensive tunnels and shafts are not required to reach it.

No one knows the value of the iron ore in Brazil, for the deposits have scarcely been touched. Near the mines several

small steel plants produce pig iron, soft steel, and hard steel. These small plants must have fuel for smelting the ore. But Minas Gerais has no deposits of coal. For this reason the small steel plants have had to use charcoal as fuel, and the making of steel has not become an important industry. Since so many of the near-by forests have been cut for charcoal, fuel must be brought from greater and greater distances. It is transported to the steel plants by a railroad which winds over many steep grades.

Brazilian steel is all used in Brazil, chiefly in Rio de Janeiro and São Paulo. Some is shipped by ocean steamer to Pôrto Alegre or to cities of the Northeast and the North.

Brazil's largest steel plant. Volta Redonda, where Brazil's greatest steel plant is located, is only ninety miles west of Rio de Janeiro. Every year it produces a third of a million tons of steel and pig iron. This steel is used chiefly for the framework of buildings.

Iron ore for the plant is brought from the high-grade deposits to the north. A large part of the coal used is imported from the United States and mixed with

the Brazilian coal obtained from mines in the South. For both materials it is important to have cheap, rapid, and regular transportation. In order to make this possible, the railroad is run by electricity and its tunnels have been made wider since the steel mill was completed.

Other minerals. In addition to gold and iron, *manganese*, which is used to harden steel, has long been mined in and near the Serra do Espinhaço. Only two countries in the world, the Soviet Union and India, have more manganese than Brazil.

Central Minas Gerais is the one main source of quartz crystals sold for use in radios and other electrical equipment. Diamonds, nickel, tungsten, copper, lead, and other minerals of great importance in industry are also mined here. These do not draw many people to the Southeast, however, since they are mined only in small quantities.

THE NORTHEAST

The Northeast covers the bulge of Brazil, the part that extends toward Africa. This is the only point where airlines from the eastern hemisphere reach

HESS FROM CUSHING

Volta Redonda. At the bottom of the picture are the homes of the steel workers. The factory buildings can be seen in the background. You should decide from the picture whether this is a dry or humid region.





MONKMEYER

Jangadas are pulled up on the beach on rollers made of logs. The sails are very large for such small boats. One was left up so that the photographer could get a good picture.

South America without first crossing North America. The Northeast includes two quite different sections. Along the coast south of the city of Natal are sugarcane plantations. The rest of the region is a country in which the rainfall varies. The people cannot depend upon the land for their living. Drouths or floods have very often driven the inhabitants of the interior out to the fishing ports on the coast. Therefore many of the people have come to depend on the sea as a means of making a simple but sure living. The land has failed them many times, but the sea never has.

The jangada fishermen. From the fishing ports fleets of *jangadas* can be seen going out to sea in the early morning. A jangada is a sailing raft made of lightweight logs. The sail is usually a large, three-cornered piece of patched cotton managed by one rope. Tied firmly to

one of the benches in the vessel are the fishing materials, perhaps also a jug of water, and some cold food. In case the raft turns over, nothing will be lost.

For many miles along the coast of northeast Brazil the beach is open and not protected from the sea. The surf breaking on the sandy shore is so rough that most boats would be swamped in attempting to set out or to land. But the featherweight jangadas float like corks on the rough water.

The barefoot, swarthy fishermen are of Portuguese descent or of mixed Portuguese, Indian, and Negro descent. They have no fear of the sea, but boldly thrust their jangadas into the foaming surf. When it seems that they must surely have been swallowed up, they bob up, and the fishermen set their sails. The gentle offshore breeze of the early morning carries them steadily out to sea.

Many jangada fishermen find good fishing about ten miles offshore, but it is even better farther out, up to about sixty miles. The men often sail out one day, fish on the next, and return on the third day. They find their way back to port by means of the stars at night or by the sun in the daytime. At night they hang a lantern on top of the mast as a signal to large ships, which otherwise might run them down.

By afternoon the winds have shifted and blow onshore. Driven along by the strong sea breeze, the fishermen return to land, arriving about sunset. They pull the jangadas with their loads of fish far up on the beach out of reach of the pounding surf. They find a good market for their catch right there on the beach, because few food crops are raised in this dry region.

On the beach, too, men may be seen fishing with nets, which they throw far out over the rough water. Also traps are set to catch fish that come close to shore.

Need of depending on the sea for a living. This part of northeast Brazil is a land of terrible drouths. In good years almost all the rain falls between December and early May. Sometimes there are violent showers that last only a short time. In some months there may be four or five heavy showers within a few days and then no more rain for weeks.

In bad years there may be no rain at all, or so much in April and May that parts of the land are flooded and crops rot in the ground. One bad year may follow another.

In this region the soil is hard, sandy, and light colored. On the coast are sandy beaches and bluffs that rise steeply from the water. Sand dunes may be

seen, with patches of farm land here and there among them. There are also scrub forests in which the trees, by shedding their leaves, stop growing and thus live through a drouth.

In times of drouth crops wither, cattle die, and thousands of people from the interior flee to the state of São Paulo or to the coast. They scatter all the way from the city of Belém to Rio de Janeiro in search of a living.

Carnauba wax palms. Many groves of *carnauba palms* grow wild in the low, coastal part of the dry Northeast. These are found chiefly around the edges of lakes, small streams, and marshes. The tree is well suited to this region of a long, hot, dry season followed by a short, hot, rainy season. The rainy season encourages its growth; then during the dry season the tree puts forth a wax similar to beeswax, to cover its leaves and keep the

Carnauba palms on a flood plain of a stream in Brazil. Is this the dry or wet season?

MONKMEYER





HESS FROM CUSHING

This Brazilian factory manufactures by-products from the shells of babassu nuts. The two most important by-products are tar and coke.

moisture in. The dry season also permits harvesting and drying the leaves from which the wax is obtained.

Carnauba wax is exported, mostly to the United States. It has many uses. It is used in making floor wax, phonograph records, waterproof paper, carbon paper, furniture polish, shoe polish, and many other articles. In Brazil the wood of the tree is used for floors, bridges, and fences, since it is very hard and cannot be destroyed by insects. Most of the people of northern Brazil sleep in hammocks made of carnauba fibers. Many wear carnauba fiber hats. The people also use the fibers in making fish nets, ropes, baskets, mats, and brooms. The stalks, burned and pounded into a powder, provide a substance used in making soap, and the roots, burned to ashes, yield mineral salts. After drouths have made other foliage shrivel up and die, young carnauba shoots have saved cattle from starvation.

Other useful plants. Besides the carnauba palm, certain other useful plants are found in the dry Northeast. One is

a shrub that produces *oiticica* oil, sometimes used in the manufacture of paint and varnish. After the oil has been taken from the seeds, the substances left may be used as fuel or fertilizer. The *babassu palm* grows here, too. From the kernels of the babassu nuts, a fine oil is obtained, which is used in making soap, margarine, and cooking oil.

Cattle raising. As in the South and the Southeast, the chief work of the people in the interior of the dry region is raising half-wild cattle of a lean breed. To find enough pasture in such dry lands, the herders must move often from place to place. They must find water holes and dig wells to get water. Even so, in years of extreme drouth they may lose thousands of animals from thirst.

Farming. Although the chief occupation of the northeastern interior is cattle raising, farming is done in irrigated spots. Small cotton plantations are scattered about in areas that can be irrigated from rivers or springs. The cotton grown is the Brazilian tree cotton, which has long silky fibers that are very

strong. It is useful in making automobile tires and is much in demand.

In years of sufficient rainfall small sections of land in the interior are planted with corn, beans, and vegetables, watered only by the rain. In dry years these gardens are killed off and there is little green food. However, as long as the livestock have enough feed and water, the people have meat.

Irrigation water. Some Brazilians believe that much of the northeastern interior could be made into a rich farming region if water were supplied for irrigation from the São Francisco River during times of drouth, and if dams were built to hold back the water during times of flood. The Brazilian government has spent vast sums of money in building canals and reservoirs in which water can be stored during the rainy periods for use during dry periods. Some day, perhaps, many new products will be raised on irrigated land in this region. Until then, the dry interior of Brazil will be of little use to the people.

Early sugar industry. Stretching along the east coast of Brazil from Natal to Salvador is a strip of land where the

rainfall can be depended on. About three hundred fifty years ago this area was famous all over the world as the sugar empire of Brazil.

This empire was centered around the cities of Salvador and Recife. Locate these cities south of Natal. Here the first slave markets of the New World were held to supply the Portuguese landowners with workers. Here rich planters lived on huge fazendas, owned thousands of Negro slaves, and ruled their land as kings. Most of the fazendas were laid out on the same pattern. The buildings consisted of the owner's mansion, built of stone and cement, a large sugar mill called the *engenho*, a church, and the slave quarters, built of mud and thatch.

The sugar lands along the northeast coast of Brazil became the most thickly settled part of Portuguese America. The Portuguese had already had experience raising sugar cane before they came to Brazil, and could make the land produce well. The deep, rich soil, the warm, tropical climate, and the abundant rainfall were good for growing sugar cane.

The cane sugar exported from Brazil was the only low-price sugar in the

WEIMER FROM THREE LIONS

A modern Brazilian sugar mill. Workers gather for a celebration. In the center are stalks of some of the best sugar cane grown.



European markets at that time. It brought great wealth to the landowners. For many years afterward, Brazil continued to lead the world in the production of cane sugar.

Decline of the sugar industry. As time went on, however, Brazil lost control of the sugar markets of the world. Why? First, the soil had been used for so many years to grow sugar cane that it no longer had much of the plant food which cane needs. Second, thousands of people left the sugar lands to move to new regions where they expected to become richer. Some went to Minas Gerais because gold and diamonds had been discovered there. Third, planters in the rich sugar lands of the West Indies set up better mills with new kinds of machinery and produced sugar very cheaply. The old-fashioned *engenhos* of Brazil, in which oxen turned wooden rollers to grind the cane, could not produce raw sugar to sell for so low a price. Fourth, the slaves were made free and the Brazilian plantations lost their cheap labor supply. Then the sugar planters had to share their profits with tenant workers or sell parts of the land to small farmers.

These changes caused Brazil to fall to sixth place in the list of world producers of cane sugar. During the past fifty years, most of Brazil's sugar has been sold within the country.

Sugar fazendas of today. Meanwhile a great change has taken place in the fazendas. Most of the old plantations with their king-like landowners and their old-fashioned *engenhos* have slowly disappeared. Few of the landowners still live on their fazendas. Instead they rent their land and live in beautiful Rio de Janeiro. The slave quarters, once packed with slaves, are empty. The

houses of the tenants who work the fazendas are scattered about on the plantation, widely separated from one another.

Many fazendas have been bought up by huge companies with offices in Rio de Janeiro. These companies hire workers, often former tenants on the plantations, to cultivate the sugar lands and harvest the crop. Even now, sugar cane requires large numbers of field hands. At harvest season the cane is cut by hand, transported quickly to the mills before the juice ferments, and then ground. Often all the cane for a large area is taken to one huge, modern sugar mill, which not only produces raw sugar but also refines it for market.

Brazil's great advantage in growing sugar cane is that the sugar can be harvested at all times of the year.

Cacao. Southwest of the city of Salvador but not far from the sea lies a strip of land called the Cacao Belt. This belt, which is about three hundred sixty miles long, is only fifty miles wide in some places and a hundred miles in others. Millions of cacao trees grow here, producing more than nine tenths of Brazil's entire crop.

All along the near-by coast are small ports to which the cacao beans are brought for shipping. Salvador is one of the chief ports for exporting cacao. It is first shipped in small vessels from other ports to Salvador. There the beans are graded, packed again in sacks, and then exported to foreign countries. Usually more than half of the cacao exported goes to the United States.

Other crops. On the map on page 184, see what other crops are grown in the Northeast. About two thirds of all the tobacco raised in Brazil comes from this region. Cotton can be grown where



JAMES SAWDERS—COMBINE

A village near Belém. The inhabitants get their living by gathering forest products for trade. As you can see, in this rainy region plants grow rapidly in the village clearings.

there is less rainfall than is needed for sugar cane. Therefore, the farm lands on which cotton is grown extend farther into the dry interior of Brazil than did the old sugar lands.

Most of the cotton from this region is a short-fiber type, the kind usually sold in world markets. In recent years Brazil has been using more and more of its raw cotton in the making of textiles. Of all the cotton raised in Brazil, the Northeast raises about half.

Besides large amounts of sugar, cotton, and tobacco, other crops grown are manioc, rice, and corn in small amounts, and a variety of fruits, especially bananas

and oranges. This area has the right soil and climate to become one of the great fruit-growing regions of the world.

THE NORTH

The North of Brazil is often called the Amazon region. The gigantic Amazon River with its long branches winds through the dense rain forests. Only a few people live in the whole vast area. Most of them stay in or near the few towns on the river banks. Almost no one lives back from the river.

The Amazon River. With its branches the Amazon is the largest river system in the world. Unlike the Orinoco

River the Amazon has no delta. Instead the mouth of the Amazon consists of estuaries, or wide channels entered by the ocean tides. When the tide is high, it enters the maze of channels and even rushes up the main stream of the Amazon and its branches for a distance of more than four hundred miles.

Marajó Island. At the mouth of the Amazon is a huge island, Marajó Island, which is twice as large as our state of Massachusetts. Dense tropical forest covers the southwest part of the island. Only the northeast half is open country, a vast grazing ground on which cattle are raised.

Highland as well as plain. Only a part of the Amazon region is a plain. On the map on page 56, follow the Amazon upstream from its mouth. Notice that above the place where the main stream is joined by the Rio Madeira, the plain widens out between highlands to the north and the south. It keeps widening until it is about eight hundred miles across. In this region the plain is generally above the level of the highest floods. The flood plain of the main stream is seldom more than fifty miles wide.

The point at which two rivers meet (or two railroads, or two highways) is called a *junction*. East of the junction of the Rio Madeira with the Amazon, the highlands bordering the basin come closer and closer together. The flood plain of the river is just a long narrow area of lowland between them. But east of the junction between the Rio Xingú and the Amazon the plain widens out into a broad area of low country on either side of the river's mouth.

The main stream of the Amazon has a very gradual slope all the way from the

front of the Andes to the sea. At Manaus the water is only about a hundred feet above sea level.

Soil in the Amazon region. The soil is fertile only on the river flood plains. Here new layers of silt are left after each flood. The soil on the land that is not flooded is poor. The water from heavy rains soaking into the ground carries away the fine part of the soil and some of the minerals. In this way the soil becomes less fertile.

Slight changes in temperature. In the Amazon region, the weather from day to day changes little. There are not the great differences in temperature that people who live in the middle latitudes experience from season to season and even from day to day. Why?

Heavy rainfall. The rainfall of the whole Amazon region is heavy. No part of the area is dry. The heaviest rains come from January to June. The drier part of the year is really only a season of less rain. In both rainy and dry seasons there are heavy daytime showers followed by clear weather. The nights are almost always clear.

The tropical rain forests. In the Amazon basin dense forests cover a million square miles or more, about a third of the area of our country. The forest is broken only on the uplands and on parts of the flood plains. These are small swampy areas where cattle, knee deep in water, graze on the coarse grass. The forest is made up of many kinds of trees and shrubs, thousands of kinds in a square mile. Since there are no rapid temperature changes and no really dry season, each kind of tree bears its flowers, ripens its fruit, and drops its leaves at its own time. Birds of many kinds feed on the ripe fruit and then move to another kind

of tree as it is ready to furnish food. All this life is high overhead in the dense foliage. On the ground, all is dark and silent.

Few forest animals. The Amazon forests have few large animals. Birds, insects, snakes, and monkeys live in the treetops. Sometimes tapirs may be seen coming to the water to drink. In the rivers are different kinds of fish, turtles, and alligators.

Wealth of forest products. The trees in the forest are hardwoods of many kinds, including mahogany, rosewood, and ebony. These trees are widely scattered in the forest, one here, another there. For this as well as other reasons it is difficult and costly to get the timber out and to deliver it to foreign markets.

For the size of its forests, Brazil exports little timber.

Every year Brazil nuts are exported to the value of millions of dollars. Many other forest products, including carnauba wax, gums, oils, dyewood, and tanning materials, are also exported.

Discovery of rubber trees. The rubber trees in the Amazon forest have drawn more people to that area than any other single resource. Rubber was not known to the people of Europe and Asia until men began to explore the New World. Then, in the hot, rainy, tangled forests of the Amazon region were found the two chief kinds of trees from which the milky liquid called *latex* can be obtained for making rubber. The bark of one kind of rubber tree may be tapped

Tapping a rubber tree in Brazil. The latex will flow out of the grooves into a cup. On the ground is a pile of cacao pods, which the rubber worker has gathered in the forest.

JAMES SAWDERS—COMBINE





JAMES SAWDERS—COMBINE AND HESS FROM CUSHING

Brazilian forest workers use smoke to harden latex so that it can be shipped. The lumps are built up in layers by dipping them into the latex and holding them in dense smoke.

many times for latex. This tree grows only where the climate is warm the year round and where the rainfall is heavy. It reaches a height of over a hundred feet and measures three or four feet around its trunk. The other kind of rubber tree is not so productive because the latex can be obtained only by cutting down the tree.

Importance of rubber. Rubber was not important in the world until two things happened. First, Charles Good-year learned how to treat rubber so that it would not become sticky in hot weather or brittle in cold weather. This is called *vulcanizing* the rubber, a method of applying sulfur and heat to make the rubber tougher and more elastic and to make it last longer. Second, several important uses for rubber were discovered, such as for automobile tires and for coating electric wires.

Growth of rubber centers. After these discoveries people flocked to the Amazon region from many parts of the world. Here 300,000,000 rubber trees grew wild. Thousands of people from the drouth areas of Brazil went to the

North in search of a living. Even so, the big problem was to find enough workers to gather the latex. Because the wild rubber trees were scattered among other kinds of trees growing in the forest, the gathering of latex was slow. Paths had to be cut through the thick jungle near the streams. Indians were used as slaves. They were not used to long hours of hard work, and many of them died of the white man's diseases.

Two great rubber centers grew up: Belém at the mouth of the Amazon and Manaus on the Rio Negro. Many an owner went to these cities to get workers for his rubber lands. Each family of workers was taken by boat to a place along the river and left to build a rude hut for a shelter. The workers then gathered latex, treated it with smoke, and molded it into solid lumps of rubber. Since there were no roads through the forests, only the rubber trees fairly near the river were tapped, and large areas were never reached at all. The owner sent a boatman around to pick up the lumps of crude rubber and to leave fresh supplies for the workers.

Rise of the rubber industry in the Orient. For a while Brazil grew rich by the profits from its rubber. Rubber became its greatest money-maker next to coffee. Then large rubber plantations were started in Malaya and Sumatra in the Orient. On the plantations the trees were planted in rows and well cared for. Thirty years later, the plantations on the other side of the world from Brazil were producing over nine tenths of the world's rubber.

Decline of the Brazilian rubber industry. How did this come about? First, in the Orient the cost of tapping rubber trees was much less than in Brazil. One man in the Amazon region could attend to only about two hundred trees, for they were widely scattered. But on the rubber plantations of Sumatra and Malaya, one man could care for more than five hundred trees.

In the Amazon the gatherer, knowing that his pay depended on the amount of latex gathered, at times tapped the trees too often. He knew nothing about how to take care of the trees. In the Orient the trees were carefully tapped and given the attention of experts.

The result was that a tree in the Amazon forest yielded only about three pounds of rubber per year. But the tree on a Malayan plantation yielded as many as seventeen pounds per year.

Labor in the Orient was plentiful, for the rubber plantations were near some of the most densely settled regions of the world. The healthy laborers on the plantations worked well and steadily. The Amazon workmen, on the other hand, were ill-fed and often sick.

In some parts of the Amazon region the old methods of gathering rubber are still used today. There are, however, a

few large rubber plantations in Brazil, run by large companies or by the government. But only a few of these plantations are successful. Those run by the government are expected to furnish tire factories in São Paulo with raw material.

During World War II, when Japan controlled the rubber-producing areas in the Orient, methods of producing rubber cheaply from other raw materials were discovered. Such rubber, which is not natural rubber and does not come from trees, is called *synthetic* rubber. At the end of the war most of the trees on the oriental plantations were found in good condition and ready to be tapped. Since then, less synthetic rubber has been manufactured.

Belém. Belém is the chief seaport for the Amazon Basin. It is located on the Rio do Pará, one of the larger mouths of the Amazon. From the neighboring forest, workers gather the Brazil nuts, the rubber, the hardwoods, the fruits, the oils, and the other products on which the city's sea trade is based. The prosperity of the city depends on this trade.

If you visited Belém harbor, you would find it full of ocean-going steamers landing their cargoes at modern concrete wharves. In one section of the harbor

At Belém goods are often shipped in hand-woven baskets because there they are much cheaper to make than wooden crates.

HESS FROM CUSHING



hundreds of native sailboats lie with sails furled. Many are piled high with fish; others carry cargoes of cattle. Although these small boats with square sterns and bows are slow, they are the chief means of transport for goods produced in the area and sold in Belém. You would see also teams of long-horned oxen such as the early settlers in the United States used. These teams haul away from the docks huge crates, which contain machinery imported from the United States.

Before products of the interior reach Belém, they are brought to ports upstream on the Amazon, which act as collecting centers. Manaus is the largest of these ports.

USE OF BRAZIL'S RESOURCES

We have seen that as you leave the large settlements along the coasts of Brazil and go toward the interior, you come to a vast, thinly settled region. This is by far the largest part of Brazil. Why is so much of South America's largest country sparsely populated?

Poor people with few skills. The

large landowners have brought to Brazil immigrants who knew only the simplest ways of gaining a living from the land and were content to work on the land of others. The landowners have been more interested in securing cheap labor for their fazendas than in bringing to Brazil immigrants who have the knowledge and the skills necessary to live as independent farmers.

Many of the people cannot get good food or medical care. The majority cannot read or write. Not more than a third of the children ever go to school. Without good diet, doctors, and knowledge of how to take care of their health, the poor people in Brazil, as in other countries, suffer from sickness and disease.

These people work very hard for their bare living, harder than most people work in the United States. Why, then, do they remain poor? The answer is that their poverty actually keeps them poor. They have no money to pay for schools and teachers and thus to educate their children to better ways of gaining a living. They cannot afford to buy farm machines, to build dams and canals or



HESS FROM CUSHING

While the jangada fishermen are out on the ocean, their wives and daughters often sit in the shade of their stucco houses making lace.

HESS FROM CUSHING

Road building is a part of the difficult and expensive work that must be done before the many resources of Brazil can be developed.



drainage works to improve their land. Therefore they cannot produce any surplus crops to sell for money. The only way they can hope to better their living conditions is to discover a valuable mine or to gain quick, high profits from a very valuable crop or forest product.

Desire for quick wealth. Again and again in the history of Brazil the discovery of a particular resource such as gold, or land especially suited to the growing of coffee, cotton, rubber, or sugar cane, has caused people to rush to the area in the hope of becoming rich. Each time, however, something has happened to end the large profits. The few people who have been successful have then moved away. Those who have failed to find wealth have remained because they have had no money with which to move elsewhere. These have been able to keep alive only through fire farming or gathering forest products. Without money, machinery, and engineering skill they cannot develop the resources of the interior. They leave the interior as soon as they can.

Changes today. Many people believe that this situation is now changing. The rise of the steel industry in Brazil is causing other industries to be built, chiefly those that furnish the raw materials or make use of the products of the steel industry. New companies being formed in Brazil have the money, the machines, and the knowledge to push into the interior, to develop the resources there, to build railroads and highways, and to make lasting settlements. The men who work for these companies have better food, clothing, and shelter. The farmers are better off because they can market their products in the new settlements or ship them to the cities. They can send their children to school. They can hear news about the outside world. They can gradually learn better ways of using their land. Good transportation will help people to obtain the products of the great Brazilian forests. Brazil, explored and abandoned again and again, may yet become a great source of food, clothing, and shelter for the rest of the world.

Thinking About Geography

In these chapters on Brazil, the country has been divided into five regions: North, Northeast, Southeast, South, and Backlands. Copy the names of these regions, leaving a space under each. Then copy each of the following statements under each region to which it applies.

opportunities for pioneer settlement
very sparse population
some very dry parts
some very wet parts
precious metals and gems
modern sugar plantations
coffee fazendas
most prosperous part of Brazil
permanent settlers
fazendas worked by tenant farmers
farms worked by their owners
best railroads in the country
tropical rain forest
the region producing Brazil's chief export
a rubber-producing region
the location of Brazil's capital city
an industrial region

KNOWING THE DIFFERENCES

Explain the differences between:

- a. a tropical rain forest and a jungle
- b. a savanna and a prairie
- c. the interior and the hinterland
- d. natural rubber and synthetic rubber
- e. an estuary and a river junction
- f. a carnauba palm and a babassú palm
- g. a rice region and a sugar region

PRODUCTS OF BRAZIL

The map on page 184 shows where Brazil's important products are produced. For each of the five regions copy the

products in lists under the following heads: Forest products; Subsistence crops; Commercial crops; Minerals; Animals. Under Animals list as many animal products as you know are produced in each region.

A CLASS SCRAPBOOK

1. Write a report on one of these topics, using the information in this book and in any other books you may have. Try to find some pictures to make your report more interesting. After all the reports have been finished, paste them in a class book on Brazil.

São Paulo, a manufacturing center
The capital of Brazil
The work of Oswaldo Cruz
Air transportation in Brazil
The jangada fishermen
The early sugar industry
The Amazon Lowland

2. Collect as much material about Brazilian coffee as you can for your class scrapbook. Arrange a class program in which members report on each of the following topics: location of the fazendas; conditions required by coffee trees; a description of a coffee fazenda; kinds of coffee; marketing of coffee.

THINGS TO EXPLAIN

1. Fire farming is said to be a wasteful method of farming. Give at least three reasons that show why this statement is true.

2. There are four reasons that explain why Brazil lost control of the sugar market of the world. What are they?

3. Little change in the weather takes place from day to day in the Amazon region. Why?

4. At one time Brazil grew rich by the profits from its rubber. What has caused the decline of the Brazilian rubber industry? Why can plantation rubber be produced more cheaply than wild rubber?

5. The desire for quick wealth has often resulted in poverty as people have moved to new regions in Brazil. Explain the way in which this occurs.

6. The steel industry has not yet become important in Minas Gerais even though it has an abundant supply of iron ore. Why?

7. The rise of the steel industry in Brazil may bring important changes in the lives of the people. What changes would you expect?

8. Most of the people of Brazil have remained poor in the midst of a wealth of natural resources. Explain why this is so.

WHAT KIND?

On your paper match the words in the left-hand column with the words in the right-hand column. Then explain exactly what kind of thing each item is. (Example: *oiticica*—a kind of oil. It is used in the manufacture of paint and varnish.)

<i>oiticica</i>	a kind of meat
<i>lagoon</i>	a kind of plantation
<i>fazenda</i>	a kind of belt
<i>placer</i>	a kind of oil
<i>conveyor</i>	a kind of mining
<i>jangada</i>	a kind of salt-water pond
<i>engenho</i>	a kind of mineral
<i>quartz</i>	a kind of boat
<i>jerked beef</i>	a kind of mill

USING RESOURCES

You have read how man uses the natural resources of the earth to provide himself with the necessities of life. Write a short paragraph on each of the following items, telling how man puts the following things to use.

hydro-electric power	latex
carnauba palms	manganese
tropical rain forests	prairies

WORKING WITH MAPS

1. In Rio de Janiero the average temperature of the coldest month, July, is 69 degrees and the average temperature of the warmest month, February, is 79 degrees. Using a map, explain reasons for this slight difference in temperature throughout the year. Also explain why it is colder in July than in February.

2. Name and show on a map of Brazil the location of:

a big steel mill	a barrier to travel
a fine harbor	a rich iron-ore region

3. Name and locate the following cities and tell at least one important fact about each:

São Paulo	Santos
Pôrto Alegre	Recife
Natal	Salvador
Belém	Iquitos
Manaus	Rio de Janeiro
	(three facts)

4. Name and show on the map of Brazil the location of:

a great coffee port
a manufacturing city
a power plant
a prosperous coffee region
a region of small farms
a coal-mining district



PINNEY FROM MONKMEYER

A sugar plantation in British Guiana. The dugout canoe is the kind used by native Indians long before white men came to South America. What part of British Guiana is shown?

Dependent Countries on the Mainland of South and Middle America

In this book you have studied the independent countries on the mainland of Middle and South America. They fly their own flags and have their own governments. There are also four dependent countries on the mainland. Each of these colonies flies the flag of the country to which it belongs and by which it is governed. These are British Honduras and the three Guiana colonies—British, Dutch, and French.

When white people were building colonies in South America, they found a wide belt of forest from Paraguay northward through the Amazon Basin to the coast of Guiana. Neither the Spaniards nor the Portuguese felt at home in these forests. The Portuguese made their homes in what is now São Paulo and Northeast Brazil. The Spaniards built their villages and towns along the Caribbean and the northern part of the Pacific

coast. Into the area between these settlements came Europeans from other countries. These people from northern Europe were used to forests.

THE GUIANA COLONIES

On the map of South America, page 56, find the Guiana Highlands. These are cut off from the rest of the continent by several rivers, particularly the Orinoco and the Amazon. This highland territory belongs partly to Venezuela, partly to Brazil, and partly to the European countries which have established colonies there. These colonies are British Guiana, Dutch Guiana, and French Guiana.

This region lies only a short distance north of the equator and has warm weather all year round. The highlands are almost entirely covered with tropical rain forest. Except along the flat, swampy coast, most of the Guianas are thinly populated.

Low mountains with steep sides and rounded tops rise above the highland in Dutch and French Guiana. Find these mountains on the map. How many rivers can you count crossing the Guiana Highlands?

In the Guianas the rivers, broken by falls and rapids, are the only highways between the interior and the coast, but only short stretches are safe or useful for travel. They rush through the forests along rocky beds, tumble over ledges, and leap down steep cliffs in falls of many hundreds of feet. The Guianas are noted for their great waterfalls. Locate Kaieteur Falls on the map. It is almost five times as high as Niagara.

In your study of Venezuela you learned that the Guiana Highlands have been little explored by white men. In the

southern parts of the Guianas live tribes of primitive Indians. Deep in the interior are found also tribes of Negroes who have their own languages and live much as their ancestors did in the African rain forests. They are descendants of the slaves who escaped into the interior during colonial times. The part of the Guianas that white people know most about is the lowland lying along the north coast.

British Guiana. Which of the three colonies in the Guiana territory is the largest? The Dutch people who first settled this area built dikes and canals that are still in use. On the population map, page 11, you may see that the only thickly settled part of British Guiana is the eastern half of the coastal lowland. The population is made up of different races—Negroes, Indians, orientals, a few whites, and people of mixed descent.

Sugar cane is British Guiana's leading crop. It is grown on large plantations along the well-populated part of the coast. On these lowlands are also many small farms. Some are planted in subsistence crops, others in coconuts and cacao. From the forests of the interior come many kinds of valuable hardwoods.

Forest clearing in French Guiana. Houses are built on stilts for protection from snakes.

JAMES SAWDERS—COMBINE





JAMES SAWDERS—COMBINE

Manioc in British Guiana. Juice is squeezed and washed from the pulp before baking.

From the stream beds in certain areas come gold and diamonds.

The most important work is the mining of *bauxite*, a clay-like mineral from which aluminum is obtained. Because it is light and strong, aluminum is used instead of steel or wood in airplanes and fast trains. Among the other products of aluminum are pots and pans for the kitchen. Most of the bauxite mines are worked by a large North American company. It ships the mineral to the United States for refining. Some bauxite is mined in the United States, but most of that which we use comes from the Guianas.

Dutch Guiana, or Suriname. In many ways the middle colony of the Guianas, Dutch Guiana or Suriname, as it is called, is similar to British Guiana. It has the same variety of races. Its cultivated lands produce sugar, rice, coffee, and oranges. From its interior come valuable woods and *balata*, the dried juice or gum of a tree, which is used in covering electric wires. Important

amounts of bauxite and gold are also produced.

French Guiana. The smallest of the three colonies, French Guiana, has long been known for its prison colony, now abandoned, on Devils Island off the coast.

Only a very small part of French Guiana is cultivated. Every year the inhabitants must be supplied with imports of necessary foods. Yet the climate of the country is good for growing almost any tropical crop.

BRITISH HONDURAS

British Honduras is a European possession on the mainland of Central America just south of Yucatán. Find it on the map on page 16. This colony is in a section of heavily wooded and very rainy Caribbean coast (map, page 20). Part of the land is low and swampy, crossed by many sluggish, winding rivers. The other part, to the south, is hilly with low mountain ranges. Here the coast has good harbors deep enough for ocean-going ships.

As in the Guianas the population is made up of different races—Negro, mulatto, Indian, mestizo, and white. Some food crops are raised, but not enough to feed the inhabitants. Much food is imported.

The colony exports forest products, including chicle and beautiful woods, especially mahogany, cedar, and rosewood, used in making furniture. The chicle is collected by migratory laborers and brought to small forest clearings, where it is picked up by airplanes. Recently banana plantations have been laid out along the coast. The banana industry is becoming one of the most important in British Honduras.

Learning From Maps and Pictures

It is interesting to read about the geography of faraway regions, but it is often more valuable to try to find out things from maps, pictures, tables, and the other sources of geographic knowledge. On page 38 you read a map study of Central America, which told you much about the surface of the land. The maps on pages 11, 16, 20, and 21 give facts about the population, the surface, the rainfall, and the vegetation of British Honduras. From a study of these maps and from what you have read in this chapter, write a report on a short trip into British Honduras. Tell where you would land, what the people are like, what kind of weather you would experience, what the natural vegetation is like, how you would travel, and how people are earning a living.

WHAT CAN YOU SEE IN A PICTURE?

This picture shows Kaieteur Falls in British Guiana. How high are they compared with Niagara? From studying the picture you should be able to answer the following questions:

1. Is the climate of the region humid or dry? How do you know?
2. Is the land above the falls mountainous, hilly, or level? What in the picture tells you that it might be a plateau? Find Kaieteur Falls on the map on page 56, and using both the map and the picture describe the land above the falls.
3. Do you think the region is densely or thinly populated? Why?
4. Around such a waterfall in the

United States you would probably see either a power plant or electric wires leading from a power plant downstream. Tell one reason why no power plants have been built at Kaieteur Falls.

THINGS TO EXPLAIN

1. Explain *bauxite* and *balata*, telling what they are, and how they are used.
2. List the products of the Guianas. Which do you think is the most useful to us in the United States? Why?
3. Why did the Spanish and Portuguese not settle in the Guianas?
4. Why are the rivers in the Guianas not useful highways into the interior?
5. Why do you think the Guianas have been little explored by white men?





EWING GALLOWAY

Farmers in Puerto Rico plant tobacco and subsistence crops on the hillsides because there is not enough level land. Many of the thin white lines in the picture are hillside gullies.

The West Indies

Perhaps you have read of the pirates who once traveled on the Caribbean Sea. Many fierce battles have been fought there. Long ago warlike Indians traveled from island to island to raid the villages of peaceful tribes. Explorers from Europe visited some of the islands in search of treasure. Pirates robbed merchant ships of the riches they had found in the New World.

In 1492 Columbus visited the West Indies in search of a new route to the

East. Believing that he had come upon the coast of India, Columbus named the islands the Indies and called the natives Indians. He did not realize that the islands upon which he had stumbled were stepping stones to a new world.

An island chain. The islands in the West Indies stretch in a curve from the southern tip of Florida to the north-eastern corner of Venezuela. If the ocean water were drained away, you could see that the islands are the tops

All kinds of shelters are found in the West Indies. At the top is the capital building at Havana, Cuba, together with tall, modern office buildings. The farm house in the center picture is also in Cuba. In the third picture are the primitive huts of some very poor people who live in the interior of Haiti.

of several mountain ranges rising from the ocean floor, some of them six or seven miles. The West Indies include thousands of islands of different sizes and shapes. Notice on the map, page 17, that some are large, some small; some high, some low; some mountainous, some level.

Some were formed by the eruptions of volcanoes, which piled lava high above the sea. Others were formed because parts of the ocean floor very slowly rose above sea level. On the bottom of the ocean are layers of shells produced by sea animals. After a long time the layers become solid limestone. Because the tropical waters surrounding the West Indies are warm, *coral reefs* are constantly being built up. These are solid ridges formed by the skeletons of millions of tiny sea animals called *coral polyps*. The coral reefs, when lifted above sea level, also become limestone. Today the islands of the West Indies are still changing, as waves wear down their shores, as volcanoes erupt, and as parts of the ocean floor are raised or lowered. Most of these changes take place very gradually over thousands of years.

It would be impossible to count all the islands in this chain. Some are rocks or reefs or bits of land—mere dots on the surface of the earth—scattered among larger islands. But more than forty of the islands are inhabited.



Seeing the West Indies by Map

On the map on page 17 note in what direction from the United States the West Indies lie. What two bodies of water do the islands separate? In what part of the chain are the four largest islands? What is the name of the largest island?

A close look. The four large islands make up the Greater Antilles. The smaller ones, extending in a curve to South America, form the Lesser Antilles. Those that lie in a string north of Cuba and east of Florida are the Bahama Islands.

On the map locate the second largest island, Hispaniola. In what direction from Cuba does Hispaniola lie? What two countries occupy this island? Which island is third in size among the West Indies?

Find Puerto Rico, fourth in size, on the map. It is the much worn-down top of one of the highest mountains in the world. Except for its flat top this mountain lies under the sea.

In less than an hour by plane or overnight by boat you can travel from Puerto Rico eastward to the Virgin Islands. Find these on the map. They include hundreds of volcanic islands, some merely small cones poking their tops out of the water.

Climate. Why do we say that the West Indies are tropical islands? They have a mild climate, in many places never so hot in summer as in southern United States and never so cold in winter as on the continent. They are touched by currents of warm ocean water. The northeast trade winds from the ocean

blow over the islands day and night all through the year.

The trade winds produce great differences in rainfall on the eastern and western sides of the mountainous islands. From the warm ocean water the air picks up large quantities of moisture. Because the air rises upon reaching the higher lands, it cools, forming towering clouds and causing heavy rain on the *windward* sides of the islands, or the sides against which the wind usually blows. Therefore the northeast sides have an abundance of rainfall, while the southwest sides have scanty rainfall. (On the map locate an island area where you would expect heavy rainfall.) Because showers come so often, you might imagine that the windward sides would always be damp or even wet. But the sudden showers are followed by sunshine and warm breezes, which quickly dry up all signs of rain.

Tropical hurricanes. Few parts of the world have a more delightful climate than the West Indies. They have long days of bright sunshine, ocean breezes, and warm, comfortable nights. But these islands are not always free from violent storms. The months of August, September, and October are anxious months for the people on some of the islands, for their tropical *hurricanes* often sweep across the northern West Indies. Some hurricanes bring such heavy rainfall that much of the land is soon flooded. A hurricane may destroy everything in its path, bringing starvation, disease, poverty, and even death to hundreds of people.



WIDE-WORLD PHOTOS

Hurricanes in the West Indies often cause destructive floods. The owner of this house, near Havana, Cuba, sits on his roof and patiently waits for the floodwaters to go down.

A hurricane is a great whirl of air that rotates rapidly as its center moves slowly across land and sea. The air in a hurricane sometimes blows at the rate of two hundred miles an hour while the center may be moving at only about twelve miles an hour. These terrible storms start off the coast of Africa and then sweep westward toward the Lesser Antilles. Usually they bend toward the north as they travel and often reach parts of the United States. Trace their path on a map. Most of them follow about the same path, damaging the same areas again and again.

It seems an almost hopeless task for the people who survive to try to repair the destruction. They must erect new homes, churches, and other shelters. They must plant new crops. They must set out new trees, which take years to grow.

Flags of the West Indies. If you were to travel through the West Indies, you would see many different flags flying over the different islands. Three countries are independent: Cuba, Haiti, and the Dominican Republic. Each flies its own flag and has its own government. Notice that these three countries occupy the two largest islands of the Greater Antilles group. The other islands do not have their own flags. Each flies the flag of the country by which it is governed. Two islands belong to Venezuela. The other dependent islands are possessions of Great Britain, France, the Netherlands, and the United States.

CUBA

Cuba is the largest island of the West Indies and is close to the United States. It is a great sugar-producing island, and many of its people earn their living by



ROEHN FROM MONKMEYER

This Cuban tenant farmer is planting sugar cane in freshly plowed land. He throws the joints of cane into the furrows made by the plows.

working on sugar plantations or in sugar mills. Because of its sugar exports, Cuba usually has more foreign trade than all the countries of Central America taken together or all the other islands of the West Indies. Cuba's trade depends almost entirely on the United States.

Most of Cuba is gently rolling country. At least half of the entire island is level enough for farming by machine, and in this area roads and railroads can be built cheaply. This is important in transporting cane from the fields to the mills and raw sugar from the mills to the docks.

Farming in Cuba. Ample rainfall, fertile soil, and a tropical climate with no frost, all make the island good for farming. Because of these natural advantages many different crops can be grown. But although tobacco and other crops are raised, Cuba continues to be chiefly a sugar producer.

The rainfall comes mostly in the long, wet summer season—from April to early December. With ample moisture, the stalks and the leaves of the cane grow well. A cool, dry winter season follows, during which the cane ripens.

Four to eight crops of cane can be grown from a single planting. This makes the cost of raising cane much less than it would otherwise be. Not many other countries have this advantage.

On a modern sugar plantation. A *finc*a is a small country estate. Few of the *finc*as in Cuba are cultivated by the owners. Most *finc*as are divided into plots and rented to tenants who produce sugar cane. The tenants give the owner a share of their sugar as rent.

Taking the cane to the mill. After the cane has been cut, each farmer brings to the fields a heavy, two-wheeled cart, into which he loads the cane. The cart is usually drawn by two yoke of oxen, but as many as eight yoke are sometimes used, particularly after the rains begin late in April toward the end of the harvest season. Then the ground is so soft that the oxen must use all their strength to keep the cane moving toward the big central mill, called the *central*.

Soon many cane cutters in the neighborhood have their carts loaded. A procession of cane carts begins to move along the lanes between the fields. When

EUNICE SAWDERS FROM COMBINE

This large Cuban mill crushes the sugar cane, producing raw sugar. Lines of loaded railroad cars from the cane fields wait to be unloaded.



a farmer reaches the mill, his cane is unloaded and weighed. Then he returns to his field for another load.

The farmers distant from the mill drive to scales located at convenient points. After this cane has been weighed, it is transported by railway to the mill. A sugar district must have a good system of transportation from the fields to the mill if the cane is to be handled quickly.

For more than three months the work at the central continues, night and day. Every two minutes an oxcart load of cane is crushed in this great mill.

Making raw sugar. About an eighth of the entire weight of the cane is juice from which sugar is made. The woody part of the stalk which is left after crushing is used as fuel to keep the mill machinery going.

The raw sugar from the mill has coarse grains and is dark brown in color, smelling strongly of molasses. This is sacked ready for shipping.

Good sugar lands. Because Cuba is a long, narrow island, all the sugar fincas are close to the coast. This makes it possible for many sugar companies to

have their own docks near the mills. Cuba is close to seaports in the United States, the world's greatest sugar market. It is therefore easy to export sugar to the people of the United States.

Cuba supplies a fifth of all the sugar entering world trade and more than four fifths of all the sugar exported from Latin America. Sugar is even more important to Cuba than coffee is to Brazil. Much of the profit of the sugar industry goes to the foreigners, mostly citizens of the United States, who own the mills.

Tobacco. Cuba has long been famous for its tobacco. The crop is raised on small farms of about forty acres. But the work of cultivating, harvesting, and curing the tobacco is so great that at least twenty laborers are required on each farm.

The young tobacco plants are set out in well fertilized soil, usually in October. The plants that produce the best tobacco are grown under cheesecloth. This protects them from the strong rays of the sun and from insects that might bore holes in the leaves. About fifty-five days after planting, the crop is ready for harvest.

After the tobacco has been cured, some of it is used in the making of cigars and cigarettes. The leaves without the smallest hole are used to wrap the best quality of cigars. Those that are torn or damaged are used for the inner part of the cigar.

Cigar and cigarette making is an important manufacturing industry in most of the larger cities of Cuba. However, some of the larger cigar companies have built factories in Tampa, Florida, to avoid paying the high tax which the United States collects on imported cigars. The United States has long been Cuba's best tobacco customer.

The Cuban people. Cuba is not so densely populated as its neighbors. It is far less crowded than the other great sugar-producing island of the world, Java, in the Orient. Also, many of Cuba's people are city people. For these reasons, the sugar planters find it hard to get enough laborers to harvest the sugar cane. Because laborers are so scarce, they must be paid high wages. Workers from near-by islands are imported during the busy season.

Links between Cuba and the United States. The prosperity of the Cuban people is closely linked with that of the United States. Cuba is closer to the important centers of population in the United States than is any other Latin American country. Much beet sugar and a little cane sugar are produced in the United States, but together they make up only a small part of the sugar we use. Cuba has become a commercial country chiefly because of the large market in the United States for its sugar. The tobacco exports of the island are not nearly so large in value as the exports of sugar and sugar products.

Havana. On the map on page 17 locate the Cuban capital, Havana. It is the center of all the activities of Cuba. A narrow channel leads into the wide bay on which the city is located. The bay is so large that it can hold a thousand ships at a time. It is deep enough for the largest ocean-going vessels.

Unfortunately the dock area is not deep enough for ocean-going vessels, and it is necessary to use lighters to unload the ships.

Most streets in Havana are narrow. Some of the older ones are mere passages with sidewalks not more than eighteen inches wide. These old downtown streets were laid out years ago around a central plaza. The homes and shops in the older sections are built out to the sidewalk. Shop windows are enclosed with iron bars. These were placed there largely for protection because the windows are kept open for fresh air.

Havana has a population of about eight hundred thousand. Its most important manufacturing industry is the making of cigars and cigarettes. Besides its activities in trade and government, it has a large tourist business, especially during the winter months. Travelers from North America visit the city for rest and recreation.

HISPANIOLA

The second largest island in the West Indies is Hispaniola. The eastern two thirds of the island is occupied by the Dominican Republic. The republic is not densely populated. Its people are of Spanish descent or of mixed Spanish and Negro descent, and are Spanish in their way of living. The western third of the island is occupied by Haiti. It is very densely populated. Most of the people



JONES FROM MONKMEYER

A beach in Haiti. The bundles of sugar cane are being shipped in small boats to the sugar mill. The women have gathered along the beach to trade and to visit with their friends.

are Negro in race, even though they speak the French language and follow French customs.

On the Dominican side of the border are large estates having tenant workers. On the Haitian side are small farms, each worked by its owner.

The island of Hispaniola is rugged and mountainous with steep-sided, narrow ranges and deep valleys. Notice on the map on page 17 that great mountain ranges run the entire length of the island from the eastern shore westward almost to the border of Haiti and then north-west into the northern peninsula.

In the wetter parts of the island are dense rain forests, and on the drier slopes, thorny scrub forests. Other dry areas are grasslands with trees growing only in the narrow, wet canyons.

Settlement of the island. The early Spanish settlements on Hispaniola were in the east. Later, English and French

pirates landed on the western side of the island. The French drove out the English and built settlements in Haiti, especially along the northern coast. The French settlements grew sugar for European markets and together became one of the world's richest colonies.

The French plantations used such large numbers of Negro slaves that soon there were more Negroes than whites. The Negroes revolted and destroyed the estates, and the white landowners fled from the island. The Negroes then declared their independence and gave the island the Indian name, Haiti. They brought the whole island under their rule and formed a republic. It was forty years before the Dominican Republic became independent.

The Dominican Republic. During World War I the United States sent its marines to the island in order to guard the approach to the Panamá Canal. The



STANDARD OIL CO. (N.J.) BY MORRIS

A modern movie theater in Ciudad Trujillo, the capital city of the Dominican Republic.

marines built roads and railroads. With such help, the Dominican Republic gained in its export trade.

The republic is a sugar-producing country. At harvest time labor is imported from other islands and from Haiti. When the busy season is over, the Haitians return to their own country.

The people depend for their living chiefly on income from sugar exports. When the price of sugar is high, the people are prosperous. When it is low, they have hard times. This is true also in many other West Indian islands. As in Cuba, most of the sugar is milled in factories owned by North Americans.

Other farm crops raised are coffee, cacao, tobacco, sisal, and rice. Many of these products are exported to Europe.

The Dominicans. Most of the Dominican people work on the sugar-cane plantations, the rice plantations, and the ranches. The large sugar estates are on the southern coastal plain east of Ciudad Trujillo, the capital. Each plantation has a group of buildings in which live

the cane cutters, the oxcart drivers, the other field workers, and the laborers in the mill. Many of these houses are miserable hovels, and most of the workers are poorly paid and poorly clad.

Outside the large plantations are many farmers who work very hard to obtain a bare living from poor soil. They live in houses of palm thatch with hard earthen floors and with little furniture.

Ciudad Trujillo. The capital city, Ciudad Trujillo, is the oldest town in America. It is not only the center of government but also the commercial and industrial center of the republic. The capital is one of the few crowded parts of the republic.

The Haitians. The country of Haiti is the only Negro nation in the entire western hemisphere. What does the map on page 11 tell you about the population of Haiti?

After the Haitians revolted, they did not continue the systems of irrigation which the French settlers had built on the lowlands. Many Haitians moved to the mountain regions and grew their own supplies of food. The growing of sugar for export was almost stopped, but the export of coffee was continued. New coffee trees were planted on the steep mountain slopes, where they grew like wild trees of the forest, without care. Yet the coffee produced was very fragrant and was easily sold in France. Even today it is one of the highest-priced coffees in the world.

The official language in Haiti is French. The everyday life of the people is partly French and partly like that of their Negro ancestors. In Haiti, people gather at the markets, chiefly to see their friends. A farmer's wife fills a shallow basket with coffee, pineapples, beans,

bananas, or other farm products. She places it atop her head and journeys perhaps fifteen or twenty miles to market on foot. However, the farmers do not raise large surplus crops to sell for profit.

A very small number of people are mulattoes, often of French descent. These people, who have often traveled far and are wealthy and well educated, hold most of the offices in the government. They live in the cities or on plantations.

Farming in Haiti. Two thirds of the area of Haiti is mountainous. Great stretches of the country receive little rain, and much of the land is not fertile. Yet millions of people make their living by tilling the soil. In fact, the vast majority of the people are farmers, but each cultivates only enough land to provide his own food.

The Haitians are good tropical farmers. However, plows are scarce in Haiti, and modern farm machinery is almost unknown. The farms of Haiti do not grow enough food for the dense population.

Only a few export crops are raised. By far the most important of these is coffee. Raw sugar from mills owned by United States companies is also exported. Other exports include bananas, sisal, and some cacao, cotton, and molasses. Almost all of Haiti's exports go to the United States.

Many poor people. The farming people live in poor huts without conveniences. Around the huts are a few chickens and burros. There may be a few pigs and sometimes a cow or two. Since a farmer can spare little land for pasture, cows are not numerous. In the uplands and the mountains are large numbers of goats, kept for skins, which are exported, and for milk and meat.

The government of Haiti wants to improve the living conditions of the people but lacks money for the purpose. It cannot provide schools or more healthful houses. Haiti has less money per person than the Dominican Republic and far less than Cuba.

Port-au-Prince. Most Haitians live in small towns or in the country. The capital of Haiti, Port-au-Prince, is the largest population center, with about a quarter of a million people. This is about the size of Salt Lake City, Utah or Providence, Rhode Island or Akron, Ohio. In some ways Port-au-Prince is a modern city. Its streets are paved and bordered by sidewalks. There are several first-class restaurants in the city that serve French cooking. There are two good motion-picture houses that show both French and English films. The university is also located here, but the market place is one of the most interesting spots of all. Here country women come to sell vegetables, trinkets, and other things which their families produce and to buy food, clothing, and other articles they need.

On this large banana plantation in the Dominican Republic, a grader repairs roads.

EWING GALLOWAY





COMBINE PHOTOS

Cane harvest in Puerto Rico. The machete was probably made in the United States.

THE UNITED STATES IN THE WEST INDIES

If you were taking an airplane trip eastward over the island of Puerto Rico, you would look down upon green and brown fields stretching back from the water's edge over the foothills and up to the dark mountains. Sugar-cane and pineapple fields, fruit orchards, and palm groves are spread along the coast. Tobacco fields and coffee groves cover the hills and steep slopes of the rugged interior. Here and there little towns dot the countryside. There are larger cities, too, with modern factories and busy ports.

One can see from the air that Puerto Rico is a crowded island. Everywhere you look are small homes—along the roads and paths, clinging to the steep hillsides, and even scattered among the

mountaintops. Modern highways and country roads form a network over the land, which seems to be almost completely covered with groves and with fields of cane waving in the wind.

Another view. After seeing Puerto Rico from the air, you might think that it is an island paradise. But life for most of the Puerto Rican people is far from happy. Three fourths of the inhabitants are poorly fed, poorly clothed, and poorly sheltered. To understand why most Puerto Ricans are poor you must know more about how they live and how the land has been used.

A Spanish colony. In colonial days there were times when sugar cane and coffee crops brought wealth to Puerto Rico as it did to Spain's other colonies in the New World. But when these crops no longer paid well, the colony had long periods of poverty. During the four centuries of Spanish rule, little was done to help the people obtain a better living.

Puerto Rico today. In 1898, following a war with Spain, Puerto Rico became a territory of the United States. Since 1947 the people have been electing their own governor, and today they make their own laws and have their own police force and army. Although the Puerto Ricans are citizens of the United States, their history, their language, and their ways of living and thinking are chiefly Spanish.

The United States has built hundreds of miles of good roads so that farm products might be brought to market more easily and at lower cost. Many schools have been built. Health conditions have been improved because of steps taken by the United States at great expense. Certain diseases, such as yellow fever, have been wiped out.

But even though some diseases have

been overcome, much illness remains. Poverty and hunger are still common among the people. The population has increased until there are too many people to be fed from the small area of land. There are still not enough schools, and less than half of the people have been educated.

Farm lands. During the time that the United States has governed Puerto Rico, North Americans have bought huge tracts of land on the island. With modern machines the owners have made these lands into plantations producing commercial crops. The plantations have brought good incomes to their owners but have not greatly helped the Puerto Rican people.

The best land in Puerto Rico has been used for commercial crops instead of food crops for the people. This is why much of the island's food must be imported. Much of the food and other things that the islanders must buy are purchased from the United States.

The sugar plantations. Sugar is the leading commercial crop of Puerto Rico. Nearly all the good level land along the coasts is planted in sugar cane, as well as many fertile valleys in the interior and even some of the sloping hillsides. Wherever sugar cane can be grown, it has crowded out other crops.

Sometimes sugar has been raised on slopes that are too steep, and gullies have been cut in the land. Now in the midst of the green fields there are great red gashes where all the topsoil has been washed away.

Many plantations are run by managers from the United States, with Puerto Ricans working as field laborers. Some of these plantations, as large as 15,000 or 20,000 acres or even larger, are like small cities. They have their own mills and refineries, their own railroads, homes for the plantation workers, stores, and even their own airports.

On these large plantations the cane is made into sugar, molasses, and rum and

Every year pineapple farming by modern methods is increasing in Puerto Rico. In the picture below men cultivate a field of half grown plants. When the pineapples are ripe, they are picked by hand as at the right.

JAMES SAWDERS—COMBINE PHOTO



prepared for export. The sugar mills, surrounded by vast fields of cane, are as modern as industrial plants in the United States. But even today oxen are used for drawing the great loads of cane from the fields to the mills.

During the harvest season, there is need for many laborers on the plantations. But at other times there is little work for the thousands of laborers who live in the crowded sugar districts. They cannot make enough money to buy all the food which their families need.

The fruit plantations. The growing of tropical fruits is becoming more and more important in Puerto Rico. Some of the lands along the northern coast, just to the west of San Juan, are planted in grapefruit and oranges. Pineapples are raised in some of the mountainous regions. Most of the orchards are owned by planters from the United States who run their own farms and live in Puerto Rico.

The coffee plantations. Coffee is grown as a money crop on about a fifth of the farms on the island. The coffee groves are on the steep slopes and mountainsides of the higher interior parts of the island. To furnish shade and protection

Three modern factories. They are part of the industrial development in Puerto Rico.

GOVERNMENT OF PUERTO RICO BY ATILES



for the tender coffee trees, bananas and other trees are grown in the groves. Most of the coffee groves are owned by native Puerto Ricans who run their own farms.

The tobacco farms. Another important commercial crop raised in Puerto Rico is tobacco. It is grown in the valleys and along the slopes of the mountains on the windward side of the island. The tobacco farms are very small. They are run by their owners or by tenant farmers. The wives and children of the farmers help with the work.

After the tobacco has been harvested, food crops such as corn, beans, rice, and yams are grown in the same fields. Other fields on the farm are used for additional food crops, which are so badly needed, or for grazing animals.

The poor farmers. With practically all the good land used for commercial crops, few of the rural people have gardens of their own. They must buy most of their food or, as is often the case, they must do without. Many of these farmers live on a diet of little more than coffee, corn, beans, rice, and salt fish. They work hard to be able to buy even these foods.

Because there is so little space for houses, the homes of the farmers are built along the dusty roadsides, on tiny patches on the hillsides, or on the edges of swamps where the land is not good for farming. The houses are small and crowded, and this makes it difficult to keep them clean.

San Juan. Though most of the island is devoted to farming, Puerto Rico also has numerous cities, some large and modern, others small and old-fashioned. San Juan is the capital city and chief port. It is the oldest city that today flies the



Improving living conditions in Puerto Rico. *On the left are some of the five thousand new homes that are now being built in San Juan.*



MELS FROM CUSHING

On the right is a new and modern high school.

United States flag. San Juan was settled about a hundred years before the first permanent settlement was made on the James River in Virginia. In the old part of town still stand many homes that were built by the early Spanish settlers but are still in use.

San Juan is one of the busiest ports in the West Indies. A visit to its docks will show what Puerto Rico buys and what it sells. Into the holds of steamers, most of them United States vessels, pour fruits, coffee, tobacco, coconuts, needlework, basket ware, sugar, and sugar products—alcohol, molasses, and rum. Out of other ships, also mostly from the United States, come meat, rice, beans, codfish, flour, lumber, gasoline, shoes, cloth, and many other manufactured articles. Puerto Ricans depend on the United States even for bare necessities of life such as flour for bread and materials with which to build their homes.

What the Puerto Ricans want. Many of the Puerto Ricans would like their island to become one of our states, perhaps the forty-ninth state. Few are satisfied with conditions as they are now. The government of Puerto Rico is trying

to increase the food supply and to encourage some of the people to leave the island.

In order to increase the food supply, the Puerto Rican government has bought vast estates of many thousands of acres and divided them into farms of five hundred acres each, which are run by Puerto Rican farmers. If this experiment in dividing up the land is successful, others will be tried.

The government has also been encouraging new industries by allowing them freedom from certain taxes. Many factories have been built recently and are providing work for large numbers of Puerto Ricans. These people earn wages with which to buy food, clothing, and medical care.

The Virgin Islands of the United States. The Virgin Islands include hundreds of small islands. Some belong to Great Britain, but the United States owns more than fifty of them. Of these fifty only three are large enough to be important.

Nine tenths of the people on these islands are Negroes, descendants of slaves imported to work on the great sugar

plantations of early days. Most of the people speak English and are proud to call themselves North Americans.

Of the three important Virgin Islands belonging to the United States, St. John is the smallest and most primitive. Its only important commercial product is *bay oil*, which is obtained from leaves collected from bay trees in the scrub forests. It is exported to St. Thomas and is used in making some of the world's finest perfumes.

The largest of the United States Virgin Islands is St. Croix. Here sugar cane has been the most important crop for over three hundred years. Most of the sugar produced is made into alcohol or rum. Like the bay oil of St. John, the alcohol is shipped in small boats to St. Thomas.

St. Thomas is the most modern of the three largest Virgin Islands belonging to our country. Three fourths of the people live in the chief city, Charlotte Amalie, which is located on the southern side of the island.

On the island of Trinidad is a large bed of asphalt, which is used chiefly to pave roads.

JAMES SAWDERS—COMBINE



THE BRITISH, FRENCH, AND NETHERLANDS WEST INDIES

On the map on page 17 locate some of the many British islands in the West Indies. Find the three large ones: Jamaica, Trinidad, and Barbados. At one time France possessed many of the West Indies, but today only a few remain under its flag. Locate these few. See whether you can find an island shared by France and the Netherlands. Next locate five islands that belong to the Netherlands. Which two of these have some of the world's largest oil refineries? If you do not know, read again about the oil brought to Aruba and Curaçao from the oil fields in Venezuela (page 75).

The Bahamas, a group of small islands and low reefs that dot the water north of Cuba and east of Florida, are today a winter tourist center. Many travelers from the United States visit Nassau, on New Providence Island.

In general most of these islands are much like Puerto Rico. They are densely crowded, and most of the people are poor. The best land is used for commercial crops with the result that there is too little land for food crops. The drier islands grow cotton. The wetter islands grow sugar cane, and these are the most densely populated.

In modern times most of these possessions in the Caribbean Sea no longer bring wealth to their mother countries as they did in colonial days. Instead, many cannot support themselves without the help of their mother countries. Remember that their chief needs are more food at less cost and more opportunities to work the year round. What would you do about the poverty of the people of the West Indies?

Being Your Own Teacher

Imagine that you are going to take a trip by plane going south from Tampa, Florida to Havana, then east and south around the West Indies to Trinidad. Along the way you will see the following places. Tell what they are and locate them on the map on page 17.

1. A great sugar-producing island.
2. A West Indian island occupied by two countries.
3. The only entirely Negro nation in the western hemisphere.
4. The oldest city in America.
5. The oldest city that flies the United States flag and one of the busiest ports in the West Indies.
6. An island that produces bay oil.

SOME THINGS TO DESCRIBE

Choose two things from this list to illustrate by words or by pictures.

- a. The climate of the West Indies. If you draw a picture, show what might happen on a day in December.
- b. Transporting sugar cane to a Cuban mill.
- c. The downtown section of Havana.
- d. A market in Port-Au-Prince.
- e. A tropical hurricane. You might show its path on an outline map.
- f. The home of a farmer in Haiti.
- g. A coral reef.

THINGS TO TALK ABOUT IN CLASS

1. How do the trade winds produce great differences in rainfall on the eastern and western sides of a mountainous island? Which sides of the island have more rainfall?

2. Why are August, September, and October anxious months for the people of the West Indies?

3. What natural advantages does Cuba have for the production of sugar?

4. Why is it hard to obtain enough laborers for the sugar fincas?

5. Why is the prosperity of Cuba tied so closely to that of the United States?

6. What has the Puerto Rican government done to increase its food supply?

7. In what way is the government of Puerto Rico encouraging new industries? Why?

FINDING CONNECTIONS

Explain the connection between:

- a. The price of sugar and the prosperity of the people in Cuba.
- b. The area of Puerto Rico and the poverty of the people.
- c. The climate of the West Indies and their use as a winter resort.

MAP STUDIES

1. On the map on pages 16-17 show the location of the West Indies, explain why they are called an island chain, describe how they were formed, and suggest changes taking place in the land today.

2. Name and locate areas in the West Indies which are today among the most crowded places on earth.

3. Show at least one locality where each of the following crops is grown:

sugar cane	tobacco	coffee
grapefruit	bananas	cotton
pineapples	oranges	cacao



CUSHING

A view of the rock and town of Gibraltar from the bow of a ship in the Mediterranean Sea.

The Mediterranean Lands

You have learned that the first white settlers in Latin America came from Spain and Portugal. Afterwards, mostly during the last hundred years, many immigrants have come from Italy, which is also a Latin country.

You have seen what has happened in Latin America since the time of early European settlement. The Latin settlers brought their old ways of living to the new land. They changed the land and

they also changed the ways of living of some of the Indians they found there. In turn, their own ways of living were slowly changed. The ways in which people live and work in Latin America have developed partly from the old ways of living, partly from discovering and using the resources of the New World, and partly from new ideas and methods brought from Great Britain, the United States, and other industrial countries.

To understand what has happened in Latin America and why it happened, it is important to look also at the homelands of the Latin settlers. How are the Mediterranean countries like the countries of Latin America or different from them? You will find many differences caused by different climates and resources, different locations and different markets. But you will also find many likenesses, which come chiefly from ways of living common to both Latin Americans and southern Europeans. Understanding one area will help you to understand the other. That is why you are studying both in the same book.

Nations of farmers. Like the countries of Latin America, the Mediterranean countries are made up chiefly of farmers. In Italy and Spain, as in Latin America, there are few great factories. Wherever the land and the climate will allow a crop to be planted, you will find a farmer at work. He seldom uses farm machinery. It is too expensive for him to buy. He is often forced to use land that is steep and rough because there is not enough good land to go around. The farmer usually makes barely enough to keep his family alive.

Large, commercial estates. Until recently the best farm lands of Spain, Portugal, and Italy have been occupied by large estates similar to those in Latin America. Thus, a few people owned most of the land. The farm work was done by large numbers of peasants, or tenant workers, who owned no land, were poor, and had no education. Recently, in the Mediterranean countries as in Latin America, many large estates have been divided among small farmers, who have bought their land with the help of the government.

Development of industries. As you know, México, Chile, Argentina, and Brazil are changing from an agricultural to an industrial way of living. This is also taking place in some of the Mediterranean lands today. Such a change means many things. Large factories are built. A much larger quantity of manufactured goods is produced within the country at lower cost than would be possible in small factories or workshops. Large numbers of people move from the farms into the cities to work in these factories. The factory workers have better incomes and can buy more farm products than before. Though fewer farmers are left to cultivate the land, farm production is increased through the use of modern farming methods and machines. Because each farmer can produce and sell more goods, he, too, has a better living. The country becomes more prosperous. More and better schools can be built. More and more of the people are trained to use the resources of their country wisely and well.

Differences among countries. Although the Mediterranean countries are like Latin America in many ways, you should remember that no two countries are exactly alike. There are differences in the people, in the kind of land, and in the methods the people have developed for using the land.

Like the countries of South America, each Mediterranean country has its own problems. One country may have too little rainfall, another too few mineral resources. The special problems of the country have much to do with the way the people use the land or may learn to use it. Watch for and compare these special problems as you read later chapters.



The Mediterranean Region on the Map

Mediterranean means "between lands." Notice on the map that this great sea is shut in by land on every side. To the north of the Mediterranean is Europe; to the south, Africa. At the east end is Asia. Using your globe, see how long the Mediterranean is compared with the

width of the Atlantic Ocean at the same latitude.

The Mediterranean Sea has only one natural entrance from the rest of the world ocean. Find this entrance on the map. What is its name? Just inside it on the northern side stands the Strait of

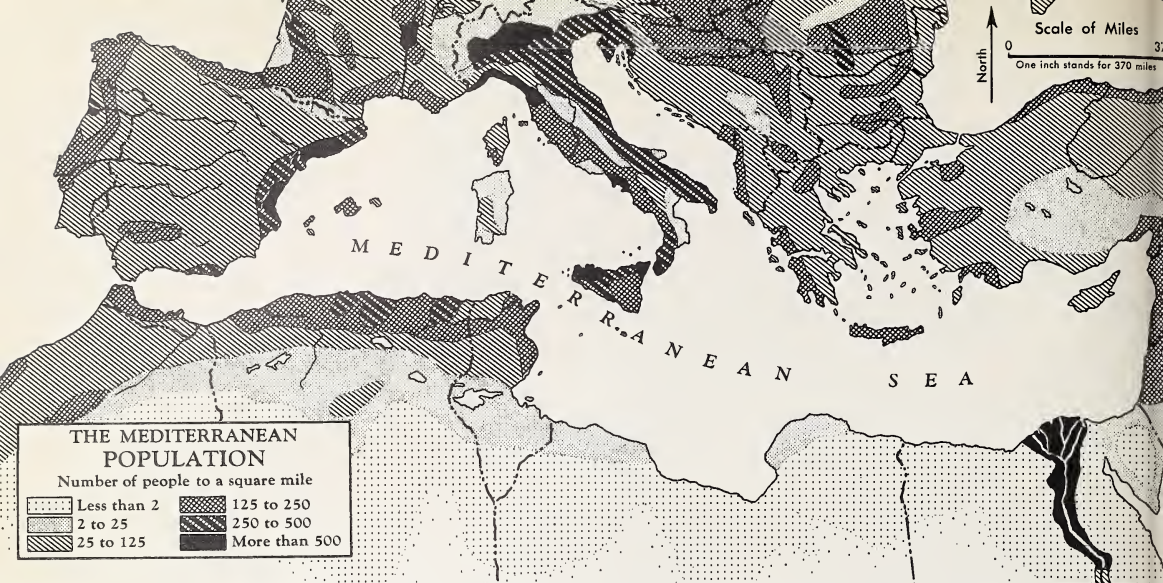


Rock of Gibraltar, which belongs to the British. The rock is connected with the mainland by a lowland. Near the east end of the Mediterranean is the Suez Canal, which leads into the Red Sea.

Three peninsulas. The first four countries we are going to study lie on peninsulas extending into the Mediterranean Sea. Spain and Portugal occupy the Iberian Peninsula. Italy and Greece each occupy a peninsula. East of Italy

is a long, narrow sea, the Adriatic, and east of Greece another, the Aegean. These seas are branches of the Mediterranean.

Many islands. Find the island of Sicily just south of the peninsula of Italy. Between Sicily and Africa is the Sicilian Channel. This strait, less than a hundred miles wide, connects the eastern and western parts of the Mediterranean. In the smaller western part are two large



islands and several small ones. The eastern Mediterranean is larger, with few islands in the south. In the north, however, are hundreds of islands, especially in the Aegean Sea.

Early sailors. On the map notice the uneven coast line of Greece and the many islands in the Aegean Sea. In ancient times men were afraid to sail far out on the sea. However, the cloud-capped islands in the Aegean can be seen from the mainland or from other islands. The sailors, who had no compass, could sail across the sea from island to island. The crooked coast of Greece with its many good harbors also helped the ancient Greeks to become great sailors. Long peninsulas extend into the sea with islands off their tips. The sailors found it easy to travel from one shore to another.

After the Greek sailors learned to use the stars to guide them, they no longer needed to stay in sight of land. At first, they did not venture out into the open ocean, but they sailed around the narrow Mediterranean Sea.

A water highway. For thousands of

years the Mediterranean has been a busy trading region. At first, small boats moved by oars traded among the islands and along the coast from Sicily to the island of Cyprus (find Cyprus on the map). Later, small sailing ships traded all around the Mediterranean and along the Atlantic coast of Europe. Today the main shipping route between Europe and the Orient passes through the Mediterranean and the Suez Canal.

When Mediterranean peoples have gone to war, invading armies have been able to travel easily by ship. They have sailed from one Mediterranean island to another and from country to country, all the way from Asia to western Europe. Armies easily crossed between Africa and Europe by way of the Strait of Gibraltar and the Sicilian Channel.

Thus Asiatic, European, and African peoples met, fighting and trading with one another at different times. They learned about one another's lands and ideas. They used one another's products. And they adopted one another's knowledge, skills, and often ways of

living. The Mediterranean Sea, instead of separating people on its different shores, has brought them together.

Mountains and deserts. Two of the Mediterranean peninsulas are blocked off from Europe by mountains. The Pyrenees Mountains form a barrier between Spain and France, and the Alps, between Italy and the countries to the north. High ranges of mountains in Greece run north into the neighboring countries. Between the ranges are long, narrow valleys. Mountains, too, extend across northwest Africa.

Let us look at the map on pages 238-239 and see all these mountains as part of one great chain. This chain extends east and west across southern Europe in a wide curve, separating the Mediterranean region from Europe.

Not far south and east of the Mediterranean is a vast desert extending from the Atlantic Ocean across northern Africa and on into the heart of Asia. Until lately this dry wasteland could be crossed only by slow camel caravan. Even today, in our modern age of airplanes, much of it is little known to Europeans. It has been more of a barrier to transportation than the mountain ranges have ever been.

The Mediterranean World. The ancient Mediterranean peoples lived shut

off from the rest of the world, which they knew little about. However, they knew much about art, mathematics, navigation, government, and religion. Because of their knowledge, we call the Mediterranean the birthplace of western civilization.

THE REGION AS A WHOLE

The Mediterranean climate. In your study of geography, you have learned that many parts of the world have rain all the year round and that other parts have a rainy season and a dry season. The climate of the Mediterranean lands is quite different from that of most parts of the world and is called a *Mediterranean climate*. Rain comes in winter, and drouth in summer.

In summer the weather is much like that of deserts in the low latitudes. During the driest month no rain falls at all. Day after day the sky is without a cloud. Strong winds pick up the dusty soil from the dry earth. Most Mediterranean lands are very hot during the summer months. But near the open ocean on the west coasts of the Iberian Peninsula the water cools the land. There the climate is much like that of the middle part of Chile, which also lies in the middle latitudes.

CUSHING

Arabs look out over a vast area of sand dunes. Notice the Arabian camel with one hump and the Arab driver wearing cloak and hood.





In winter the weather in the Mediterranean lands changes often. A spell of warm, muggy, rainy weather may come with cloudy skies. It may be followed by a cool, sunny clear spell. The lowest winter temperatures are usually above freezing. Frosts and snows rarely occur.

Because of this mild climate, people from the chilly northern part of Europe visit the lands around the Mediterranean Sea in winter. The southern coast of France and the near-by coast of Italy are called the Riviera. The Riviera has long been Europe's greatest winter resort.

Scrub forests and bushes. Where the natural vegetation has not been cleared away, the visitor to these Mediterranean countries sees a scrub forest quite different from that in other climates. The trees are broadleaf evergreens, especially oaks that do not drop their leaves. The winter is not cold enough and the summer drouth is not long enough for all the leaves to fall at one time. They keep growing the year round. New leaves appear in the fall shortly after the rains begin.

The trees grow far apart, as in other

dry lands, so that their roots can draw moisture from a large space. Between the larger trees grow small bushes. All the plants send roots deep down into the ground and outward near the surface to get water. The thick bark of the plants and their small, thick leaves, which are stiff and shiny, keep the plant's moisture from evaporating. Some of the plants bear thorns. These keep animals from eating the leaves to obtain water.

The low bushes between the trees have little value. Only goats will graze on their bark and leaves.

The important points. As you read about each Mediterranean country and its own problems, you should keep in mind these points about the whole region: 1. The importance of the Mediterranean as a waterway. 2. The Mediterranean climate. 3. The scrub forests, which can be found in all the countries you are about to study. 4. The separation of the region from surrounding lands by mountains and deserts.

The chapters that follow tell about Spain and Portugal, Italy, Greece, and the Mediterranean shores of Africa:

Facts and Reasons

There are important reasons why we should study the homelands of the Latin settlers if we are to understand why South America has developed as it has. Write a paragraph which will explain the most important connection between Latin America and the Mediterranean countries.

WORKING WITH MAPS

1. Imagine you are the captain of a ship just entering the Strait of Gibraltar. How would you explain to one of your passengers the location of each of the following ports and the route you would follow to get there? (Example: Oran on the northern coast of Algeria. We sail directly east.)

Valencia	Algiers	Rome
Tripoli	Palermo	Venice
Barcelona	Marseilles	Athens
Trieste	Alexandria	Genoa
Port Said	Málaga	

2. Name the seas that are branches of the Mediterranean. What are the two natural divisions of the Mediterranean? How do the different parts compare in size?

3. What natural barriers separate the Mediterranean region from the rest of Europe and Africa? Which barrier is the most difficult to cross? Why?

TELLING HOW AND WHY

1. How are farmers aided by the building of industries in near-by cities?

2. In some regions the number of farmers have decreased but total farm production has increased. How has this happened?

3. How was the coast line of Greece important in encouraging the ancient Greeks to become good sailors?

4. How has the Mediterranean Sea helped to bring together the peoples on its different shores?

5. Why are no two countries exactly alike although they may be located in the same region and have climates that are similar?

EXPLAINING FACTS AND CAUSES

1. What is meant when we say a country is changing from an agricultural to an industrial way of living?

2. What is the connection between a country's prosperity and the quality and number of its schools?

3. What is meant by a Mediterranean climate? Does it refer only to climate in countries that border the Mediterranean? Explain your answer.

4. What is the weather usually like in a Mediterranean climate during the summer months? During the winter months? Would you care to visit the Riviera during the winter? Why?

5. What is meant by a Mediterranean scrub forest? How do the trees change from season to season? Why?

6. The ways in which people in Latin America live and work are the result of two main influences. What are they?

7. Explain why a farming system made up of large estates can lead to poverty for most of the people. Do you think smaller, independent farms are the only way to improve the living conditions of the people? In what other ways can this be done?



CUSHING

Farming on the Meseta. The farmer on the right opens the canvas sails on the windmill. It is used to pump water which will be used to irrigate the crops in the fields beyond.

Spain and Portugal

The peninsula on which Spain and Portugal lie is called Iberia after an ancient people who once lived there. You already know some of the important discoveries made by its sailors. Columbus, an Italian, lived in Portugal when he was a young man. Sailing on a

Spanish ship, he discovered several parts of America. Magellan also sailed from Spain on his voyage around the world. Portugal sent the first ship around Africa to India.

After the discovery of America, merchant ships from the Iberian Peninsula

visited seaports all over the world, bringing back riches from America and the Orient. Later, after England had become a great trading country, the peninsula lost its importance as a shipping center. The ocean trade of the world moved north to England, Holland, and France.

A bridge between Europe and Africa. The Iberian Peninsula extends westward farther than any other part of the continent of Europe. Between this peninsula and Africa lies the narrow Strait of Gibraltar, about eight miles across at its narrowest point.

Long ago armies from Africa used the strait and the peninsula to invade Europe. After they had crossed the strait, they found that it was not easy to continue overland. A great central plateau, called the Meseta, covers much of the Iberian Peninsula. Some parts of the Meseta are bordered by a narrow coastal lowland; others rise directly from the sea in cliffs or steep slopes. The invaders followed the narrow lowlands along the coast of the Mediterranean. If they crossed the Meseta, they had to return to the lowlands when the great Pyrenees Mountains loomed ahead. The only easy route past these mountains is along the coast at their eastern end.

The people of the Meseta have always remained separated from the Iberian coasts and the outside world. The Meseta is difficult to reach from the sea and hard to cross. The rivers that flow westward from the plateau have cut narrow, steep-sided gorges. In few places are there broad valleys that a traveler can follow. Both in the north and in the south, the route of a traveler crossing the Meseta is blocked by mountains rising above the plateau.

Railroads and highways. Knowledge, skills, and new ways of living spread quickly from one people to another in lands crossed by good highways and railroads. These are most easily built in regions of level land or low mountains and hills. If these regions are productive and well populated, they are likely to have many railroads and highways. If they are not productive, they may have good transportation because they lie between productive and well populated regions. Transportation routes between two productive regions may cross a land poor in natural resources because that is the easiest way or the only way to go.

If a land is very rugged and hard to cross, railroads and highways may be built at great cost because some parts of it are productive of minerals or farm products or both.

The problem of transportation. If a region has few people and is not productive, and if it does not lie between two productive regions, it may have almost no railroads or modern highways. This is especially true if the region is rugged and hard to cross. As you read about Spain you will find that the Meseta is just such a region. With few modern highways and railroads, the people living on the Meseta have remained separated from others. As a result, new ideas have spread slowly among them or have not reached them at all.

Thus, although Spain has modern industrial cities, many of its people are poor farmers and herders. They live as their ancestors lived hundreds of years ago. They and the people of the industrial areas do not understand each other's ways of living nor always get along with each other. This is one of Spain's important problems.

Learning from the Map

Some lands facing an ocean have very uneven coasts with many bays, which are usually good harbors. Other lands have straight coasts with few bays or harbors. On this map notice the coast line of the Iberian Peninsula. It is the straightest in all Europe. Compare the coast line of Spain with that of Greece (pages 238–239). In which country would you expect to find good harbors?

Highlands. Look at this map to see how much of the peninsula is occupied by the Meseta, over 2000 feet above sea level. How much lowland is found on the borders? What is the name of the mountains separating the peninsula from France? The Sierra Nevada extend along most of the southern coast.

Rivers. On the map find a lowland in northeastern Spain. The Río Ebro, flowing from the Cantabrian Mountains through this lowland, draws much of its water from the Pyrenees Mountains. The river valley is shut in by mountains on both sides. The mountain slopes above the valley are used for pasture. Only here and there are cultivated fields.

Next locate the Guadalquivir, or Great River, in the south. It begins on the northern slopes of the Sierra Nevada and flows between the southeastern highland and the Meseta to the sea. Melting snow and ice from snowfields in the Sierra Nevada supply most of its water. About halfway to the sea the river comes out of the mountains onto a lowland plain. This is farmed by peasants with only the simplest tools and with methods their forefathers have used for centuries.

The rivers of the Iberian Peninsula are

almost entirely useless for transportation by boat. On the map find the Tagus River, the longest. The Tagus and the Guadalquivir are the only rivers navigable for large boats, and even they are navigable only near their mouths. The rivers of the peninsula are used mainly for much-needed irrigation.

The north coast. On the north and northwest coasts, hills and low mountains border the ocean. Here are some of the few inlets of the Iberian Peninsula. Around them are clusters of small fishing villages. The climate is much like that of England—plenty of rain and cloudy weather. Grass and trees grow well.

Coastal lowlands. Notice on the map the two lowlands on the west coast, one wider than the other. These lowlands are the most productive parts of Portugal. The winds off the Atlantic bring rain to this coast, although the amount becomes steadily less as you travel south. Find the large inlet where the Tagus River reaches the ocean. This is the excellent harbor of Lisbon. Along the coast in northern Portugal are large marshes, but in the south one often sees sand dunes.

East of the Strait of Gibraltar is no large area of lowland like the areas to the north and west. Instead the mountains to the east rise steeply from the sea and leave only a narrow rim of lowland along the shore. This area is crossed by gullies and dotted with small tufts of grass or scrub bush. On the east coast the lowland is slightly wider than on the south coast, but still narrow. Here the rainfall is very light even in winter. The summers are extremely hot and dusty,



but the winters bring some cooling winds.

Like the lowlands of Portugal, the small coastal lowlands of Spain are its most productive regions. On the population map (page 240) notice that the lowlands of the Iberian Peninsula have the densest population.

Climate on the peninsula The winds that blow on shore from the Atlantic Ocean must rise when they reach the western slopes of the Meseta. As the air rises, it becomes cooler, and rain falls on the west and northwest slopes. The winds blowing over the Meseta carry less

moisture. Therefore the Meseta is much drier than the west coast, and much of it is a steppe. The winds cannot reach the eastern sides of the hills and mountains, especially on the southeastern side of the peninsula. Here the land is arid, and very hot in summer. In winter strong winds blow across the plateau and the temperature is sometimes so low that ice forms.

During the long, hot summer the air on the Meseta is filled with dust. One cannot see very far because a dusty haze hangs over the land. At night the heat



JAMES SAWDERS—COMBINE

Fishermen repairing their nets on a beach of one of the Balearic Islands. Ruins of old stone windmills can be seen in the background.

of the day soon disappears because of the altitude. Even in midsummer the nights on the Meseta are chilly. The people wear warm clothing until the sun rises again.

Remember this about the climate of the peninsula: The southeast coast is hottest and driest because it is farthest south and farthest from the open ocean. The northwest coast is coolest and wettest because it is farthest north and on the open ocean.

Balearic Islands. On the map of the Mediterranean (page 238) locate the Balearic Islands, east of Spain. This group of islands forms a Spanish province. One of them has a very fine harbor.

FARMING IN SPAIN

Two regions. If we think of the way the people live and work in Spain, the country has two quite different regions. In the larger part of Spain most of the people rent small farms from wealthy landowners. They use the same crude, simple methods of work as their ancestors used, especially in farming. The

farmer cultivates the ground with a wooden plow drawn by a mule. His own hands and homemade primitive tools are all he has to help him get a living from the soil. We shall call this part agricultural Spain.

The other region is a modern industrial district in the north and northeast centering around the city of Barcelona. This smaller region, which is densely populated, is called Catalonia.

Most of what you will read next tells about agricultural Spain. Before you read on, try to recall what you know about tenant farming on large estates. Will the Spanish tenants make a good living? Will they be well educated?

The Spanish countryside. Let us look for a moment at the Spanish countryside, to see why most of the people can make only a poor living. The amount of land owned or rented by the farmer is often extremely small. Remember that the greatest problem of Spain is how to get water and keep it. Water, or lack of it, decides what crops shall be grown. If enough water reaches the fields, the farmer has a good crop, but even then

his farm is too small to yield much profit. If drouth comes, the farmer may go hungry and get deeply into debt.

In times past, farmers lived together in small villages so that they could protect themselves against robber bands. It is not unusual today to see many little houses clustered together on the top of a small hill, perhaps with a wall of stone surrounding the entire village.

Every morning the farmers leave the village in a long procession going toward their fields. Some of the men spend hours in traveling to and from a distant field. Along with the farmer is his mule, which carries his lunch and the tools for the day. It may also carry the children if they are to help in the fields.

Wheat. The chief crop of Spain is wheat, but not enough is raised to feed the people. Wheat must therefore be imported in order that there may be bread enough for all.

From this map you should see that wheat is an important crop in all the Mediterranean farm regions. It is grown in every part of Spain that has enough rainfall. Notice the density of wheat farms in the northwestern part of the Meseta along the Ebro River. Where

else in Spain is much wheat raised? Why do you think Spain produces more wheat than corn?

The wheat is planted after the coming of the first autumn showers. It grows quickly during the warm autumn rains but slowly during the cooler months that follow. It is ready to harvest by the dry, sunny days of late spring and early summer. Is this winter wheat or spring wheat?

Every other year the wheat farmers allow their fields to lie fallow. They plow and harrow the soil several times, first to catch the autumn showers and later to keep the moisture in the soil. They are too poor to buy commercial fertilizer, and their crops are not rotated. For this reason the yield of wheat is small. Since each field is planted only once in two years, the farmer's wheat production is usually very small.

Barley and rye. Whenever the farmer fears that part of his land is too dry to grow a good crop of wheat, he plants barley. This grain requires less water and is more likely to grow in spite of dry weather.

In dry years rye is also planted. Rye flour is used in making bread for the



farmer's table. The straw of the rye is useful for *fodder*, or feed for the farmer's cow, and occasionally for thatching a roof.

Olives. Though most of the crops raised in Spain, such as the wheat, rye, and barley, are eaten right at home, olive trees furnish the most important crop for export.

The olive is a broadleaf evergreen tree and a native of the Mediterranean lands. In appearance it is round and bushy, with dark gray-green leaves which are silver-gray on the under side. Small greenish-yellow flowers appear on the tree in the early spring. The olive itself is a fruit. Like the peach, the olive has a seed within a thick, fleshy covering of pulp. From the pulp is obtained the valuable olive oil.

The tree grows well during the winter rainy season, and during the dry season its long roots draw water from a wide area far below the surface of the ground. It is almost impossible to find a kind of soil from which the roots of the olive tree cannot draw a little water. During the rainy season the tree stores up much food in its leaves, which are fleshy and tough. When the dry weather begins, it

grows more slowly or not at all. But it loses little of its moisture because of the leathery surface of its leaves. They reflect the rays of the sun rather than absorb them. So the fruit of the tree gets larger and ripens.

The olive tree has been cultivated in the Mediterranean lands for centuries. On this map notice that olive groves are found on the Balearic Islands and in southern and eastern Spain. But the largest quantities and the finest olives are grown mainly in the valley of the Guadalquivir.

Often the olive groves are planted on hillsides, where they are able to grow well. Grapes are usually grown as far up the sides of the valley as possible. Higher up, where the soil becomes thin and rocky and grapes will not grow well, the slopes are used for olive groves. The trees are grown with little work and require irrigation only in lands bordering on a desert. However, much labor is needed to harvest olives. Sometimes whole families move to the great olive groves to work part time during the harvest.

After being picked, the olives are sent to mills where the oil is pressed from the





D.V. FROM BLACK STAR

A family picking olives in a grove in Spain. As the olives are picked, they are put into small baskets. These are emptied into the large basket in which they are carried from the grove.

pulp and made into the fine, clear, golden oil that we see in bottles on the grocer's shelves. The Spanish farmer used to produce his own oil and then bring it to market. Because he lacked good machinery and methods, the oil was almost always of poor grade. Today most of the work of making olive oil is handled in factories by experts. Spain stands first among the countries of the world in exports of olive oil.

Olive oil is the chief cooking fat of the Mediterranean countries. The average person needs a certain amount of fat in his diet every day. In regions where people eat plenty of meat, it supplies much of this fat. But in countries like those around the Mediterranean Sea,

where few meat animals are raised, fat is supplied by other foods, especially olive oil. The Spanish farmer eats his meal of beans, bread, wine, and salad and pours a little olive oil on the salad. Thus he not only improves the taste of his meal, but gets the fat that his body needs.

Part of the olive crop is pickled to remove the bitter flavor of the raw fruit. Then the olives are bottled and exported.

Grapes. Next in importance to the olive as a commercial crop is the grape. The kind of climate suited to the olive tree is also excellent for the grapevine. Although grapes grow well with little water, they need slightly better soil than is necessary for olives.



This map shows you that many vineyards are located in the Ebro Valley, in the Guadalquivir Valley, and along the southern and eastern coasts of Spain. Grapes need a suitable dry season and a soil through which the water drains quickly so that the roots of the plant will not rot from dampness. When vines are planted several feet apart, the deep, spreading roots of each plant can obtain enough moisture from the soil. There is no finer sight to see in all Spain than the great clusters of grapes hanging from the green-leaved vines on the slopes bordering a dry, dusty valley.

Grapes from Spanish vineyards are used in three ways. Some are shipped abroad just as they are picked from the vine. These are packed in finely ground cork to protect them from being bruised or crushed and to help keep them fresh.

Some grapes that would find a good market in Europe and elsewhere cannot be shipped because they are too delicate. One of these, the muscatel grape, has such a thin skin that it is crushed by handling. This kind is grown in southern Spain near the city of Málaga. The

people here take advantage of the hot sunny days and lay their grapes in the sun to dry. As the moisture evaporates, the grapes become the delicious muscatel raisins. These are wanted everywhere and do not require the careful handling necessary for the fresh grapes. Perhaps you have seen packages of Spanish muscatel raisins in the store.

Grapes are also used to make wine. When the grape is ripe, it has on its surface a waxy coating, called bloom, which contains a kind of yeast. After the grapes have been crushed, the sugar in the juice is acted upon by the yeast and *ferments*. This means that the sugar is changed to alcohol and *carbon dioxide* gas (the gas that makes soda water bubble). After the juice has stopped fermenting, it is called wine. The same gas is formed by the yeast in bread dough and makes the bread rise.

In the olden days, each farmer pressed his own grapes and then brought his wine to market. Often this wine was not well-made and perhaps was even mixed with water. Today, wine merchants buy the fresh grapes and manufacture



wine in wineries. In this way they make sure of a good quality of wine.

Wines made from grapes that were grown in different places taste different, and each kind of wine is given a name. Usually the wines are named after a part of the country known for its good wine grapes or perhaps after a seaport from which the wine is shipped. Famous brands such as La Rioja, Málaga, and Jerez (sherry in English) take their names from the Spanish towns near which the grapes are grown.

Citrus fruits. Citrus fruits are also grown in the Mediterranean lands, but in fewer regions than olives and grapes, as you can see on this map. Citrus fruits cannot stand frost, and they need much more water than olives or grapes.

The chief citrus fruit raised in Spain is the orange. Two kinds of oranges are grown: the sweet fruit that we are used to eating and a bitter orange that is shipped in great quantities to England to be made into marmalade. The English use the tart, bitter juice and the rind to make the marmalade which many people think is the best in the world.

Orange trees grow particularly well on the Valencia Lowland in eastern Spain. Valencia is an important province of Spain and is known for its modern methods of farming. From its seaport, also named Valencia, great quantities of oranges are shipped out of the country. Fully half of Spain's oranges are raised in and around the Valencia Lowland. Lemons are also raised in this area. Where else in Spain do citrus fruits grow?

The Valencia farmer irrigates his land. The map on page 247 shows that there are mountains to the west and southwest of the Valencia Lowland. On the mountains are snowfields where ice and snow are stored up during the winter. Under the hot summer sun the snow melts and streams of water rush down to the lowlands. These streams are carefully guided by canals and ditches to the orange groves, where the water is needed. Centuries ago strict laws for the use of water were set up by two peoples that invaded Spain—first by the Romans, an Italian people, and later by the Moors. The Moors were a dark-skinned people from North Africa. Many of these laws



BLACK STAR

On the island of Majorca, rain water is stored in small reservoirs. When needed, it is allowed to flow over the fields through ditches.

are still in force today. In fact, little could be done to improve the excellent irrigation systems that the Moors introduced into Spain.

When the rains fall, much of the water is stored in large reservoirs or behind dams built across small streams. During the dry season, all this stored water is used up. But by that time, the melting snow from the mountains is coming down and continues the flow of the streams and rivers. Then about the time the streams run low again, in September and October, another rainy season comes, often bringing violent floods. Sometimes a fourth of all the yearly rain falls in a single day. Besides valuable irrigation water, the mountain streams bring down to the lowlands large amounts of silt. This is deposited on the flood plains and keeps them fertile.

With these good growing conditions, orange trees can be planted close together and still be expected to bear plenty of fruit. The Valencia orange is world famous for its flavor. It is easy to market because it can be left on the tree until

late fall without spoiling. Even though Spain does not grow as many oranges as the United States does, Spain exports more oranges than any other country.

Tropical crops. Though northwestern Spain has a climate like that of England, southeastern Spain has a climate like that of the *semi-arid* lands around the edge of the Sahara in North Africa. Semi-arid means dry, but not so dry as to be desert.

Along the coast from Valencia to the southeast corner of the peninsula the climate is very dry, and the winters are always mild. The water from the mountains is used wisely. Thus it is possible to grow great crops of rice and sugar cane on and around the Valencia Lowland.

Almonds are raised here, too. The trees are usually planted in groves, although sometimes they are set out here and there on mountain slopes so rocky that one wonders how the nuts are ever harvested. When the almonds are ripe, the farmer spreads out a sheet beneath the tree and then taps the branches with long poles to shake the nuts down. These

are spread in the sun to dry. Afterwards they are cracked by hand and the nut meats sorted for size and quality. Finally they are packed into large boxes for shipment to importers in other countries.

The date palm has been planted widely over the Mediterranean lands. Like the olive tree it stores up food in its fruit. In the olive this food is oil. In the date it is sugar. Date palms require a very hot, dry climate, but plenty of water must always reach the roots. In fact, the Arabs say that if a palm is to grow, its roots must touch water.

In most Mediterranean regions there is not enough hot summer weather to cause the dates to ripen well. Small areas in southeastern Spain, however, grow these palms successfully. With their great shady branches they are prized for their beauty and the shelter they provide from the hot sun, as well as for their dates.

Livestock farming. The best pasture land for raising livestock in Spain is along the north and northwest coasts. Enough rain falls here for meadows of grass and *heather*, a small bush which has purplish flowers. Almost every farmer keeps a cow not only to provide milk but also to pull his plow, although using a milk cow to do work makes it thin and scrawny. The farmer sells most of his calves. Since the farmer and his family eat almost everything he raises, the sale of a calf may bring him the only income he ever receives.

Farther south, along the western border of Spain, sheep are grazed on grass and scrub bushes during the winter. During the dry season, they are driven higher and higher into the mountains where the pastures are greener. Pigs are also raised in this section wherever there is scrub oak to supply acorns to feed

them. Few people, however, live here on the western border because of the poor soil and poor vegetation.

Spain is famous for its mules and donkeys. These animals, though quite small, can carry immense loads. Every farmer who can possibly afford to keep a work animal has one.

Goats graze on many steep slopes in Spain where the vegetation is too thin for other animals to find enough feed. Large herds of goats are seen in the districts near the Pyrenees, where they feed on the grass at high altitudes. Though the goat is valuable for its milk and for its hair, it is a destroyer of trees. In all the Mediterranean lands, the forests in which herds of goats graze soon die. The animals kill the trees by chewing off the bark as high up as they can reach when standing on their hind legs. A farmer who wishes to protect his trees and shrubs must watch the goat herds closely or keep them fenced in.

Date palms in Spain. The fruit grows in heavy bunches near the tops of the trees.

SCREEN TRAVELER FROM GENDREAU



MINES, FACTORIES, AND CITIES OF SPAIN

An American traveling through agricultural Spain is sure to notice the primitive farming methods used by the people. He notices their lack of farm machinery and modern conveniences and their poor, small houses clustered in villages. But when he comes into the manufacturing districts, he begins to feel more at home. Here the factories, railroads, paved streets, electric power lines, and general hurry and bustle of the people remind him of cities in the United States.

This modern part of Spain is a small region in the north and northeast, in and around Catalonia. It has more industries than any other part of Spain. Its people speak a language as different from Spanish as Portuguese is. Indeed, Catalonia does not seem like a part of Spain but rather a different country.

Many of the raw materials used in Catalonian factories come from the region itself. Catalonia grows a greater variety of crops than any other section of Spain. These crops include all three of the chief Mediterranean crops: wheat, olives, and grapes. Flocks of sheep provide raw wool for the textile factories, and cotton farms supply cotton. In years of drouth or poor market, Catalonia does not suffer so much as the other regions of Spain, because it has different crops and industries. If one fails, another may be successful.

Mining industries. Industries, as we have seen, depend very much upon coal, iron, and other minerals. Spain has a greater variety of mineral resources than has any other country of Europe. Iron ore is mined along the northern, Atlantic coast of Spain. In western

parts of this area there are a few excellent coal fields. Spain, however, does not have enough coal for its needs. On the map on page 247 locate the port city of Bilbao. Some of the iron is made into steel at Bilbao and used in shipbuilding. Some of the ore is exported.

Spain has long led the other countries of Europe in the production of lead and copper. Most of the lead comes from mines along the south coast. Copper is found in famous mines northwest of the city of Seville. Spain is one of the world's chief sources of *mercury*. Mercury is a silver-white metal in liquid form, commonly used in thermometers. It is the only metal that will flow freely at ordinary temperatures. Silver is also mined in Spain.

The mines of Spain are located chiefly on the coasts, and they have been developed mostly by foreign countries, chiefly England, France, and Germany. Foreigners have provided the money, the machines, and the knowledge for mining, and have sold the mineral products in other European countries. Many skilled workers from other European countries come to Catalonia to work in the mines and factories.

Barcelona. On the map find Barcelona, the most important city of the industrial district of Spain. Barcelona lies on a narrow lowland that runs northward almost into France. This lowland can be easily reached from the north by crossing the foothills at the eastern end of the Pyrenees. For centuries armies marching between Spain and other countries of Europe took this route. The easy approach encouraged trade, which kept Barcelona in touch with new ideas and happenings in Europe.

During the centuries before the dis-

WIDE-WORLD PHOTOS

Men and boys fill water jugs at a public fountain in Barcelona. In this dry Mediterranean country most towns have such water fountains.



covery of America, Barcelona was a famous trading city. It received goods from all over the Mediterranean and sold them to people from the north. After the New World was discovered, this trade disappeared, for the European nations became interested in the great new sources of raw materials and wealth in America. Later, factories were built in Catalonia. Many of these are small textile mills, which collect cotton and wool from the near-by farms. The finished cloth is sold within the country to the people who can afford to buy it.

Along the highland slopes of Catalonia are many little valleys with streams running rapidly toward the sea. The small factories stand in a row along each valley bottom. One after the other they use the flow of the water. Power comes directly from the water wheels.

When the steam engine came into use to supply power, many textile factories were built on the coast where coal to run engines could be brought from England. When people learned to generate elec-

tricity from water power, Barcelona was able to build more factories. Three near-by rivers usually flow during all seasons and are used to produce hydroelectric power. Today, this important industrial city of Spain does not have great clouds of smoke rising from it; all the factories within the city use electricity for power.

Most spinning and weaving are still done in small, scattered factories outside the city. The finished cloth—wool, cotton, and silk—is sent to Barcelona for shipment.

Barcelona is Spain's greatest port and its chief commercial and industrial city. About a third of all Spain's imports pass through Barcelona, and about a third of the country's industries are located within twenty miles of the city. Coal and iron are imported for metal industries. Steel is made into factory machinery and into turbines, or water-driven engines, for the electric power plants. Other factories use steel to make motors, tools, electrical machinery, and airplanes.

Inland from the old city is the newer section of Barcelona, with broad boulevards and paved streets. The modern buildings, apartments, and homes found here equal the best in Europe. Here are the finest stores, clubs, restaurants, and hotels. People like to sit in the sidewalk cafes, where a table may be had at the very edge of the rushing traffic.

Madrid. Seven out of every ten people in Spain live on the narrow belts of land between the Meseta and the coast. Three out of ten, then, are left to occupy the great plateau. Madrid, the capital of Spain, is located almost in the middle of this thinly populated area.

Madrid is a modern city, having wide boulevards and one of the most beautiful opera houses in Europe. Because of its location, it has some importance as a commercial city, handling hides and wool from the many cattle and sheep pastured on the rolling country near by. Also, it has a leather industry, which uses the hides from the cattle.

Visitors to Madrid notice the harsh weather of the capital. In winter, cold air masses cross the Meseta and chill the people to the bone. In summer, the dry winds pick up the dust and whirl it into the air. Also, there are great changes in temperature during a day. The scorching heat at midday changes to nipping cold at night. The land around the capital is bare and brown, making you wonder why such an unhappy spot was chosen for the nation's first city. Yet most railroads in Spain end at Madrid, and it is almost impossible to cross Spain without changing trains in this central city.

Seville. More than any other city in Spain, Seville shows both the new and the old. Age-old churches and buildings

put up by the Arabs during their long stay in Spain stand side by side with modern buildings.

Four hundred years ago Spanish ships used to come up the Guadalquivir to the city and unload their cargoes of gold and silver from the New World. This treasure made Seville one of the richest ports in the world.

There is much also for a citizen of Seville to be proud of today. The river channel has been dredged, and large ocean-going ships are able to reach Seville. It is still an important seaport and the olive center of the world. Both olive oil and pickled olives are shipped from Seville in greater quantities than from any other port.

The land around Seville is mainly farm land, and large numbers of livestock are raised on the pastures of the valley. The region produces valuable minerals. For centuries, neighboring copper mines have produced a great quantity of copper, which has been exported through Seville. Iron ore is also exported in large amounts.

Seville is famous for its fine porcelain and cigars. Much of the porcelain is made by gypsies living on the edge of the city. They have been producing this ware for hundreds of years, and have become very skilled.

PORTUGAL

In what part of the Iberian Peninsula is the country of Portugal? Is its coast long or short for the size of the country? On what ocean does the coast face? Portugal is a nation that borders on the sea and has always had more to do with the sea and ocean trade than with the land. The boundary between Portugal



HENLE FROM MONKMEYER

In Portugal a large outdoor oven is often built at one end of the house. It is used chiefly to bake bread. Dry twigs are gathered from the near-by forests and are burned for fuel.

and Spain is crossed by several rivers flowing west through deep gorges. Traveling from one of these countries to the other has never been easy. Few people live near the border, which passes through steep valleys and high rocky plateaus.

Where the people live. Most of the Portuguese live near the coast and have farms there. The farther you travel from the coast, the more thinly settled is the land; the poorer the farms, too, for there is less rainfall. Transportation from one part of Portugal to another is chiefly by sea.

Farms. Northern Portugal is more densely populated than southern Portugal. Good crops of wheat and grapes are grown in the deep valleys of the ex-

treme north. On steps or terraces cut into the sloping sides of these valleys, are the largest wine-producing vineyards in Portugal. From Oporto, the seaport of this area, wines, apples, and oranges are shipped to England.

In the north, where there is more rainfall and the summers are not so dry as around Lisbon, much corn is raised. The farmers keep pigs which they turn loose in the oak forests to feed on the acorns. Excellent hams are exported from Portugal's greatest seaport, Lisbon. On the lowland near Lisbon, cereals, grapes, and olives are grown.

Yet not enough crops are produced in Portugal to feed the people. Portuguese farmers use the hard, slow, old-fashioned



HENLE FROM MONKMEYER

This Portuguese fishing boat is being dragged up onto the beach where it will be repaired and painted. Several children can be seen hitching a ride on the boat.

farming methods of the Spanish farmers. Also, only about half the land that could be used for farming is cultivated. Of the other half, some is used for pasture. The rest needs too difficult and costly methods of cultivation, such as much fertilizing, draining, or long and expensive irrigation canals. The Portuguese are interested in the sea and trade more than in developing new farms.

Cork. Of all the products for which Portugal is known, none is more interesting than cork, which is the outer bark of an oak tree, the *cork oak*. The bark, which grows very thick, is cut from the trunk in great slabs. New bark soon begins to grow if the slabs of cork have been cut carefully. The cutters seldom injure a tree; so they are able to gather many crops of bark from the same tree.

The slabs are then cut into smaller pieces and loaded onto a donkey's back. Because the cork is so light, a donkey sometimes carries a bundle two or even three times its own size. A familiar sight

in the towns of southern Portugal is a line of donkeys with huge loads of cork threading their way through narrow streets to warehouses.

Minerals. Like Spain, Portugal has numerous minerals. Some tungsten is exported. Copper and gold have also been found in the hills of southern Portugal. But to reach the minerals, it is necessary to build good roads and railroads and bridges to span the rocky gorges. Since this is very costly, most of the mineral resources have not been developed.

Fishermen and sailors. Fishing is excellent along the coast of Portugal. Because of the food from the sea, this region can support a population much denser than that of most of Spain. Large quantities of fish are packed and canned for export.

Perhaps you have read about the fearless Portuguese sailors of earlier times. They founded colonies not only in Brazil but also on the coasts of Africa and

India. Portugal still controls large possessions in Africa.

Lisbon. The Tagus River, which has its source in Spain, flows across the middle of Portugal through a region of sheep farms and wool industries and empties into a bay. Here, about seven miles from the open ocean, lies the very old city of Lisbon on a range of hills above the river. It is the capital and most important city of Portugal. Its harbor, wide, large, deep, and located near the world's most important shipping routes, is one of the best in the world. It is visited by ships of all nations. Ships coming to Lisbon bring manufactured goods, which are traded for the farm products of the lowlands.

The old part of Lisbon lies within city walls built long ago by the Moors. Here poor people can be seen plodding along the steep, narrow streets, carrying their burdens on their heads. Others, fortunate enough to own a donkey, walk beside their heavily loaded animals.

The new part of Lisbon is modern, with wide, straight streets, expensive homes, fine shops, and many well-kept, grassy squares. The government offices and other public buildings have been built around one of these squares, facing the bay.

Lisbon has a few industries: cotton spinning and weaving and the canning of fish. Yet Portugal as a whole is not like the city of Lisbon. It is largely a country of subsistence farming, like Spain.



HENLE FROM MONKMEYER, MELS FROM CUSHING, MELS FROM CUSHING

1. A Portuguese farmer in sheepskin trousers rests on his primitive plow. 2. This fisherwoman will carry a heavy box of sardines to market on her head, but she needs help in lifting it. 3. From the tower in background, tourists can look out over Lisbon.

THREE RAINFALL MAPS

A study of these three maps will tell you much about the climate of the Mediterranean region. On each map the brown stands for the least rainfall and the darkest blue for the heaviest. Map 1 shows yearly rainfall. What do maps 2 and 3 show? By comparing them you can see that the Mediterranean region receives most of its rainfall in winter.

Notice the areas that have less than ten inches of rainfall yearly. These areas, as you can see, are dry both summer and winter. What kind of vegetation would you expect to find here?

On Map 1, notice that most of eastern Spain receives ten to twenty inches of rainfall each year. This area is very dry in summer (map 2) and never humid, even in winter (map 3). What kind of vegetation is found here (map, page 242)? What part of Spain receives the least rainfall in winter? Why? What part receives the greatest yearly rainfall? Why?

Notice that Greece and most of Italy are very dry in July but have from two to four inches of rainfall in January. What other Mediterranean coast is very dry in July but humid in January?

The countries north of Italy and Spain receive moisture all year round—in summer, rain, and in winter, snow. But most of the moisture comes in summer, as you can see on maps 2 and 3.

THE TWO COUNTRIES

Spain's great problems. In the greater part of Spain the people live shut off from the ocean and routes of trade. They know little of the new ideas which change other countries. They have little to do with the outside world and continue to live much as their ancestors

did. Because they use old methods of farming and lack machines, they produce barely enough food for their own use. Therefore there is no surplus to trade. Most of the people of Spain work very hard merely to survive. They know little about industry and modern ways of living; they know little about their own industrial region, the northeast.

The food crops and even the industries of Spain depend on an uncertain water supply. In fact, Spain depends for its very life on the water that flows down from its mountains. During 1942–45 a drouth more terrible than any the country had had for a century dried up the land. It became worse each year after 1942 until in 1945 almost half of all farm production had been lost. Most of Spain's industry depends on water power or hydro-electric power. When water became scarce, the factories were forced to close. The great water wheels of the mills stood still. The men out of work looked to farm lands for jobs, but the land was too dry for crops to grow, and the farmers were also idle. During this period of drouth even the mines, which supply so much of Spain's exports, had to close; they had neither power nor water. Less fuel was mined, and the trains made fewer trips. Almost every important occupation in Spain suffers when there is drouth.

Portugal and trade. All of Portugal is near the sea, and for many centuries the Portuguese have been noted fishermen and traders. The country has long carried on a good export trade with other countries. It has good harbors near the chief ocean routes of the world. It has usually been able to keep out of European wars and in time of-war has served as a gateway to Europe.



Causes in Geography

Explain briefly how Spain's two greatest problems, the continued use of old farming methods and the lack of a good water supply, have made Spain a country where hard work often results only in a bare living.

PROVING THAT YOU UNDERSTAND

(Do not write in this book.)

1. The farmers of the Meseta and the industrial people of Catalonia find it difficult to understand each other because—.

2. Most of the people of the Iberian peninsula live on the lowlands because—.

3. The southeast coast of the peninsula is the hottest and driest coast because—.

4. The farmers of the Meseta live together in small villages because—.

5. The wheat farmers allow their fields to lie fallow every other year because—.

6. Few of the mineral resources of Portugal have been developed because—.

MAKING LISTS

1. List the kinds of livestock raised in Spain and tell how each kind is used.

2. List the crops exported from Spain. Where are they grown and why is each product especially suited to the region from which it comes?

3. List the mineral resources of Spain. Why are minerals such as coal and iron necessary for heavy industry?

4. List some manufactured products of Barcelona. Which ones are also manufactured in South America?

5. In two columns list the chief crops of Spain and those of the Aconcagua

Valley. Write at least two other likenesses in the agriculture of the two areas.

A MATCHING TEST

<i>mercury</i>	to change sugar into alcohol and gas
<i>heather</i>	a small bush with purplish flowers
<i>semi-arid</i>	the gas that makes soda water sparkle
<i>turbines</i>	feed for cattle
<i>ferment</i>	water driven engines
<i>carbon dioxide</i>	a tree from which cork is obtained
<i>gas</i>	dry, but not dry enough to be desert
<i>fodder</i>	a silver-white metal in liquid form
<i>cork oak</i>	

WHY AND HOW?

1. The people of the Meseta have remained separate from the rest of the Iberian peninsula and from the outside world. Why?

2. Certain regions are more likely to have good railroads and good highways than are others. There are at least four good reasons for this. What are they?

3. The olive tree is well suited to a Mediterranean climate. Why? (Explain how the tree grows in winter and in summer.)

4. Olive oil helps to satisfy the food needs of the Spanish people. How?

5. The quality of olive oil exported by Spain has been greatly improved in the last fifty years. How?

6. The location of Barcelona is an excellent one for trade. Why?

7. Why is the appearance of Barcelona quite different from that of most industrial cities?

8. How is cork obtained from the cork oak?

9. Why is Catalonia able to endure long periods of drouth and times of poor markets better than agricultural Spain? Think of the number of different ways in which the inhabitants of each region are able to make a living.

10. Why is Madrid an important city?

11. Why do we say Seville is a mixture of the new and the old? Why was Seville a great port four hundred years ago? Why is it an important seaport today?

12. Why is only about half the farm land in Portugal under cultivation?

13. Why do the people of Portugal look to the sea for part of their living instead of depending entirely upon farming?

WORKING WITH MAPS

1. Draw a map of an irrigated farm in Valencia. Describe how the farmer irrigates his land.

2. Make a products map of Spain showing the chief crops and chief minerals produced. You will want to use most of the maps in this chapter for information.

3. On the maps on page 263, find the area around Seville (you may have to look at the map on page 247). Notice that Seville receives less than an inch of rain in July and two to three inches in January. On the maps on page 72 find an area in Chile that receives less than one inch of rain in January and two to three inches in July. Do you think the climate of this part of Chile is similar to that of Seville, or different? (Compare

latitude, rainfall at different seasons, and nearness to the ocean.)

4. Using the first map on page 263, explain why the northwest corner of the Iberian peninsula is humid and the Meseta is dry.

CAN YOU NAME THESE CITIES?

1. A city famous for trade before America was discovered.

2. The olive center of the world.

3. A city with cold winters and hot summers.

4. A city famous for its oranges.

5. The city from which Columbus made his first voyage to the New World.

KNOWING ABOUT AGRICULTURE

Study each item in the following list to see whether it is an item that helps to make land produce good crops. If it is, copy it on your paper. Be ready to prove that you have made the right choices.

Regular cultivation

A dry climate

Proper soil for the particular crop

Enough rainfall for the crops planted

Farm machinery

Protection from insect pests

A wet climate

Knowledge and experience of the people in planting and caring for the crop

Nearness to the equator

A long growing season

Plenty of money to invest in the farm

Enough of the proper plant food in the soil

Sandy, gravelly, or stony soil

A high altitude

A low altitude

Proper climate for the particular crop

Good seed



TWA AIRLINE PHOTO

The Appian Way near Rome. This old Roman road has been made into a modern highway.

Italy

Each of the three peninsulas that extend southward into the Mediterranean is quite different from the others. Italy, the middle peninsula, is not so large and broad as the Iberian Peninsula. Even in northern Italy few places are more than a hundred miles from the sea, and on the peninsula most places are within fifty miles of the coast. This is very different from Spain, where most of the Meseta is distant from the sea. But like Spain, much of the area of Italy is either

hilly or mountainous; only a fifth is made up of plains. Also like Spain, Italy is cut off from the rest of Europe by a barrier of mountains. But even the high Alps have been crossed many times by armies invading Italy.

Ancient Rome. Two thousand years ago Italy ruled most of the civilized world and much of the Orient. Rome, the capital of Italy, was once the capital of all the lands about the Mediterranean Sea. The laws of Rome were copied far and

wide because they were thought to be just and fair. Many of them are still used today in other countries.

But about a thousand years before the discovery of America wild tribes from north of the Alps swept down upon the peninsula of Italy and plundered the city of Rome. One of their leaders became king of Italy, and the great Roman Empire came to an end.

A meeting ground. Because of Italy's position in the middle of the Mediterranean region, it has long been a meeting ground for people of the east and west. In past centuries the cities of Venice and Genoa were great trading centers. Find them on the map on page 239, Venice at the northern end of the Adriatic and Genoa on the Italian Riviera. To these cities the products of eastern Asia and of western Europe were brought by caravan and ship. Today the country of Italy still lies at the meeting place of ideas and goods from east and west.

Too many people. But Italy is not as prosperous as it once was. One reason is that it has too many people for the resources of the country. In reading about Brazil, you learned that the country has too few people to develop its re-

sources. Brazil has plenty of good forests but too few workers to cut down the trees and transport the lumber to market. But in Italy, which is an agricultural country, there is not enough farm land to go around. It is just like dividing a pie. If only six people are to get a piece, the pieces are of good size. But if twenty people are to get pieces, each will receive such a tiny slice that no one will be satisfied. That is true of Italy. The country is trying to divide its work and resources into so many pieces that most of the inhabitants remain poor.

The farmer in southern Italy works on a farm too small to provide his family with a good living. He has no extra income to buy farm machines or fertilizer for his land. Much of the good land is in large estates, as in Brazil, Argentina, and Chile, and commercial crops are raised by tenant workers. Even though some of the large estates have been divided up, there is still not enough good farm land for all the farmers. And the population of Italy is rapidly growing larger. What can Italy do to improve living conditions for the large number of its farming people who are now so poor?

Southern Italy. At the right a farmer lifts water from a stream to irrigate his field. At the left, women do their family washing at a public fountain made of blocks of stone.

JACOBS FROM THREE LIT.



Italy on the Map

On this map notice that Italy is shaped like a high boot and reaches southeastward into the Mediterranean Sea. Of the three peninsulas Italy extends farthest into the Mediterranean.

The Adriatic Sea. The long, narrow Adriatic Sea, an arm of the Mediterranean, is almost twice the size of our Lake Superior and is an important waterway for trade along both its shores. At the northern end are three important ports, where ships receive goods from inland Europe. What are the names of these ports?

The islands. On the map locate three islands to the west of the Italian peninsula. One of these islands, Corsica, belongs to France. The smallest of the three, Elba, and the largest, Sardinia, belong to Italy. At the toe of the boot lies the largest of all the Mediterranean islands, Sicily. This densely populated island also belongs to Italy.

The Alps. Notice that the northern boundary of Italy swings in a half circle from the Riviera in the west to the Adriatic Sea in the east. For hundreds of miles this boundary passes along the summit of the Alps, the mountain barrier of southern Europe. The Alps rise higher than any other mountains in Europe except the Caucasus (extending from the Black Sea to the Caspian). Because of the great height of the Alps, many peaks are covered with snow all the year round. On the high mountain heights, glaciers spread down into the valleys. The snows that melt during the summer months fill numerous rivers and streams with rushing water. What

European nations touch the Italian boundary?

The Po River valley. The southern slopes of the Alps rise sharply from a very low plain. Locate this plain, through which the Po River flows to the Adriatic Sea. This plain was built by the Po River and its branches. What is the name of the mountains to the south of this plain?

Long ago the Adriatic covered most of what is now the Po Valley. In the spring and fall the water from violent rains rushed in torrents down the mountain slopes. As the streams came down from the Alps and the Apennines, they carried with them quantities of gravel, sand, and silt. Water that is moving rapidly can carry a greater load than water that is moving slowly. When the rivers came to the foot of the mountains, they either flowed into the Adriatic or began to wind across the level land. They flowed more slowly and dropped much of their load of sediment. Gradually the plain you see on the map was built up by the deposits brought down from the mountains. The Alps are much higher and have more streams than the Apennines. Therefore, more sediment was brought down from the north than from the south. For this reason the valley slopes toward the Apennines.

Today the Po and its branches still carry sediment down from the mountains. Each year the sediment that is carried to the sea by the Po and its branches is enough to raise the low land, enough for the Po delta to be added to the delta.



EWING GALLOWAY

A view of Brenner Pass from the Italian side. In spite of heavy winter snows, the railroad tracks on the left are kept clear all year.

Pass cities have grown up on the lowlands on either side.

Where the Alps rise very steeply, it is easier to tunnel through them than to build roads across them. Great railroad tunnels have been cut through some of the mountain ranges. One railroad runs under a mountain for a distance of twelve miles.

The Apennines. On the map look again at the Apennines, extending in a long chain the length of the peninsula. Beginning near Genoa, the Apennines extend eastward and then continue south-eastward to the toe of Italy. Few large plains are found on the peninsula. Notice that the plains are mostly coastal lowlands. The Apennines break up the country and make transportation difficult from coast to coast.

Climate. Because of the difference in latitude, the climate of the Po Valley is quite different from that of the rest of Italy to the south. The valley has a climate like southeastern United States. Winters are mild. Summers are very hot, and not dry like those of the rest of Italy. The Po Valley receives rain in every month of the year.

South of the Po Valley, the peninsula has the Mediterranean climate, except in the high Apennines. This means, you know, winter rains and summer drouths. The winters are mild and the summers hot. How do you explain from the map that the inner part of this narrow peninsula has lower temperatures than the coasts?

You can see the difference in climate between northern Italy and southern Italy on the rainfall maps on page 263. What is the average July rainfall for the Po Valley? For southern Italy? Does the Po Valley have more rain in July or in January?

Two chief regions. The northern part of Italy is very different from the rest of the country. Here are located most of Italy's industries and its best farming lands. The methods used in farming and industry are modern as in Catalonia. However, from the mountains south of the Po Valley to the toe of the peninsula are few industries. The land is dry, rocky, and mountainous, and poor farmers still use the farming methods of their forefathers. The people of the north have a better living than those of the

south. But the good crops of the north are not large enough to provide for the large population living in the poor farming areas to the south.

This chapter tells first about northern Italy, then about the southern agricultural part, and lastly about the islands belonging to Italy.

NORTHERN INDUSTRIAL ITALY

Northern Italy includes the Italian Alps and the Po Valley. Almost half of all the inhabitants of Italy live in the north, even though it is the smaller part of the country.

Northern Italy is in many ways like Europe north of the Alps. The people of the Po Valley are a mixture of many European peoples and do not look so much alike as do the other Italians. Many of the northern Italians have blue eyes, fair skin, and light hair. Their ancestors in many cases came from across the Alps into the valley. They found a climate much like that which they had left behind. The winters are fairly cold. The summer rain makes it possible to grow crops similar to those raised north of the Alps. The lowland is level and has more rain and a cooler climate than the valleys to the south.

Mountain valleys. In the northern mountain valleys the people make their living by pasturing cattle and sheep. In winter, many herds and flocks are kept in the valleys and sheltered in stables during the cold nights. They are started up the mountains early in the spring. First they are driven to pastures on the lower slopes. Then, as the snow melts on the higher slopes, they go on to the pastures above the tree line.

All the valleys in the Italian Alps are well populated. Some of the people raise grain on small farms along the streams. Some spend only the summer in the mountains and move into lower sections of the country during the winter. And some care for their flocks in the mountains all year round.

Hydro-electric power. The melting snow of the Alps furnishes the Po Valley with a steady supply of water. In the mountain valleys north of the city of Milan are several wide, deep, beautiful lakes, which extend to the edge of the plain. These lakes act as reservoirs, storing water until it is needed.

Milan and other cities of the plain obtain electric power from the tremendous flow of water from the Alps. As the water rushes through the valleys, it is

JAMES SAWDERS—COMBINE

Italian Alps. Farmhouses are located in little groups, surrounded by pastures and fields in which wheat and other grains are cultivated.



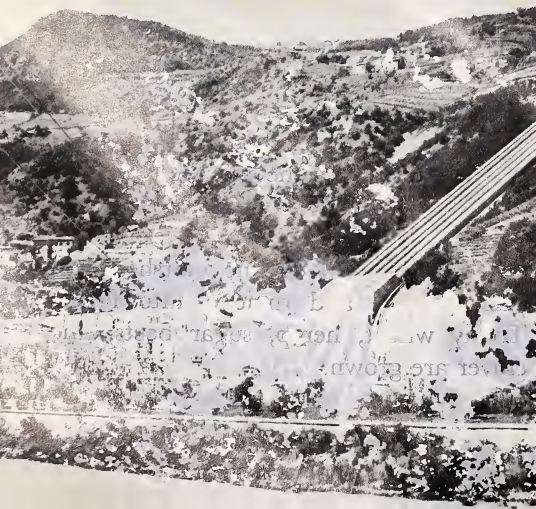
guided to large power plants, where it drives the turbines that turn the generators. Four fifths of the power in Italy comes from the mountains surrounding the Po Valley and is used in the factories of this region.

The Piedmont. At the western end of the plain is the Piedmont, almost surrounded by mountains. This area was the first in the world to be given this name, although the name is now used for similar areas elsewhere. In the hills at the foot of the mountains, woolen and cotton mills make use of the electric power generated near by. This is an important industrial area.

Turin. On the map locate the city of Turin in the middle of the Piedmont. This city has been called the Detroit of Italy because it is an important manufacturing center for automobiles and machinery. Yet it has no near-by sources of coal and iron. Its factories are run by electric power, and it receives raw materials by rail from Italy's largest port, Genoa. It is also connected with France through a pass in the western Alps.

A power plant in northern Italy. Water drops through pipes from the reservoir.

JAMES SAWDERS—COMBINE



Milan. The most productive part of the Po Valley is the middle part, north of the river, with Milan as its chief city. This is also the most densely populated section of all Italy (map, page 240).

Like Turin, Milan runs its factories with hydro-electric power. It has many textile factories and rolling mills. Because of its central location, it has become one of the important commercial cities in Europe.

Silk. This middle part of the valley leads Italy in the production of raw silk and the spinning of silk thread.

Raw silk is not native to Italy. For centuries silk was brought to Europe from the Orient, especially China. The Chinese guarded very closely the secret of how to make silk. Finally two Christian missionaries brought some silkworms back to Italy. The people learned that the silkworm is fed on mulberry leaves and that at a certain time it spins a cocoon around itself. This is made of one fine, silk thread from five to twelve hundred yards long.

After the cocoons have been finished, they are gathered and taken to factories, where they are soaked in hot water. Then skilled workers begin unwinding the thread from the cocoon. Later several threads of raw silk are wound together on reels to make threads of larger size. Still later the thread goes to another factory where it is knitted into stockings or woven into the fine, shiny cloth that is so desired all over the world.

Dairy products. Near Milan are also large, modern dairy farms. From the milk which they produce, great quantities of cheese are made. Some Italian cheeses are world famous.

In the drier parts of the Po Valley the chief crops. Corn



JAMES SAWDERS—COMBINE

Farming with hand tools in the Piedmont near Milan. Three crops are growing in one field. Grapevines are planted between the fruit trees and corn between the rows of vines.

grows well here because of the rainy summers. Because of the large level areas with excellent soil, the amount of wheat produced per acre is twice as large as in the south. The lower, damper lands, nearest the river, are used for crops that require much water, such as rice, flax, and hemp. Here one can see many dikes and canals. This area is one of large farms; many families are great landowners and

are covered with fields of wheat, corn, clover, and grapes. This is a very densely populated part of the valley. Not many of the farmers use modern methods since they are too poor to buy fertilizers and farm machines.

As we approach the sea, the land near the river becomes swampy. Once only a few hunters and fishermen lived on the Po delta. But later the swamps were pumped dry and divided into fields and

The eastern valley along the Po, we see



PHILIP GENDREAU, N.Y.

A gondola in one of the canals of Venice. Notice that the houses are built on the edge of the canal and that all the doorways open directly onto the water.

Venice. On the map find Venice, north of the Po delta. It is one of the most interesting cities in the world. If you know that Venice was Marco Polo's home, you will understand that it is a very old city. Many hundreds of years ago Venice was built on a group of islands at the northern end of the Adriatic Sea. In those days it was safer to live on islands than on the mainland.

Venice traded more and more with the Orient, importing spices, gems, silk, and gold, and selling them in all of Europe. The city grew to be large and important. The islands were covered with buildings—beautiful palaces, domed churches and many tall, graceful towers. Artists from all over Italy helped to make Venice beautiful. At last there was no space left for new buildings. So today most of the buildings seen by visitors in Venice are these wonderful old buildings of hundreds of years ago.

Only a few of the islands of Venice are large enough to have streets. In fact, the city has a few very small islands and very narrow ones. Buses, taxis, motorbuses, and cars cannot go to Venice. Only gondolas and small boats can go to Venice. But today with the motor boats Venice still uses its

famous *gondolas*—long, black rowboats with pointed and raised ends, rowed with one oar by a man who stands at the stern. The front doors of the houses open upon the water, and in many cases the back doors, too. Although there are no automobiles in Venice, it has its own traffic problems. Often you find yourself in a gondola jam and have to turn into a side canal to let other boats pass.

After the discovery of America, the countries of Europe sent their ships across the Atlantic and around the world for many of the things that Venice had been supplying. The great days of Venice had passed. What trade was left in the Adriatic was soon divided with the port of Trieste (locate it on the map). Austria, Italy's neighbor to the northeast, had built Trieste at much expense to have its own outlet to the Mediterranean.

Since Venice was for so many years interested only in sea trade, it had made no effort to develop its own agriculture. It depended on the poor crops of the mainland for its food supply. Today the old palaces have been turned into hotels. Since the weather is mild the

BURTON HOLMES FROM EWING GALLOWAY

Genoa, built on a steep hillside, has many tunnels connecting different parts of the city. This one, built of marble, is named in honor of Christopher Columbus.



year round, Venice is a popular resort in both summer and winter. It is famous for the beautiful shawls, beads, glass, and pressed leather articles that people in Venice make for the tourist trade. The charm of the canals and stately old buildings draws people as if to a great show window, and helps the people of Venice to sell their goods.

Trieste. The city of Trieste, which recently belonged to Italy, now governs itself under the control of the United Nations. Trieste is a *free port* for the countries of eastern and central Europe. This means that a country can import and export its goods through Trieste without paying a tax to any country. This port is used mainly by Yugoslavia, the country just east of the northern Adriatic.

Trieste is now the chief port for goods exported from eastern and central Europe to western Europe and the Americas. Several European countries, therefore, are interested in Trieste. One nation after another has tried to control this port.

Genoa and its surroundings. We know that the Po River flows to the west and that the eastern part of the valley,

near Venice, is the widest. Yet Venice is not the port that carries on most of the trade for the valley. The great markets for Italy, especially for the Po Valley, are to the west.

Notice on the map that the western end of the plain is bordered by a fringe of the Apennines. Here the Apennines are lower and much narrower than elsewhere. There are two low passes, one north of the city of Genoa and the other west. Railroads from Genoa to the cities of Milan and Turin cross these passes.

Using the scale of miles on the map, estimate the distance from Milan to Genoa. Now find the distance from Milan to Venice. Goods from Milan to Genoa must be transported over or through the mountains, but the trip is shorter than from Milan to Venice.

Genoa is Italy's largest and most important port. It is closer to the United States and Latin America than are other Italian ports. Moreover, trade with the western world is important to Italy. Genoa is a seaport for the industrial cities of the north and the western Po Valley, importing chiefly raw materials and exporting manufactured

goods. In addition, Genoa has its own industries, mostly textile factories, iron and steel mills, and shipyards. For its factories it has plenty of electric power and skilled labor.

The narrow strip of lowland along the coast on both sides of Genoa is the home of sailors and fishermen. Christopher Columbus came from Genoa, and from the city's skilled sailors he gathered much of the knowledge he later used in his voyages to America.

On the steep slopes above the lowland are the homes of farmers who raise grapes and olives.

The beautiful country around Genoa attracts thousands of tourists seeking the cool breezes of the Mediterranean and enjoying the beaches of the Riviera.

A productive region. Northern industrial Italy, then, is the more prosperous part of the country. It raises by far the larger part of the cereal crops: wheat, corn, and rice. It produces almost half the wine and almost all the hemp. It leads in the making of felt hats and the weaving of cotton, silk, wool, and jute. From its factories come almost all the machinery, automobiles, ships, and chemicals made in Italy. It also produces most of the electricity and has most of the railroads. It has almost half of Italy's total population but little more than a fourth of the land.

SOUTHERN AGRICULTURAL ITALY

Nowhere on the peninsula of Italy is industry very important. The inhabitants get only a bare living from the land.

The Apennines. Look again at the Apennine Mountains on the map on page 252. They cover the larger part of the peninsula, breaking it up into a

way as to make transportation difficult. East and west of these long, rugged ranges of mountains are coastal lowlands, often narrow, separated by mountains and hills. In places these small plains are marshy and not very healthful for people to live near or work in.

Though this mountain region is poor in resources, many people live here. In summer, shepherds take their flocks to the high mountain pastures, just as Alpine shepherds do. Near harvest time the flocks are driven down to the plains, and the shepherd works in the fields. After the harvest he has a warm, safe place for his flock during the winter.

There are fewer sheep and goats on the mountain pastures than there used to be. As you know, sheep and goats destroy trees. Most of Italy's forests have been cut down, and the people of Italy have learned that land without forests soon loses much of its good soil through erosion. They have passed laws to keep farmers from grazing sheep or goats near the best remaining forests.

In the central part of the Apennines the mountains reach their greatest height, and here we find the lowest temperatures south of the Alps. Some of the peaks are covered with snow from November to April. The maps on pages 249, 250, and 252 show you that these areas of high elevation grow less wheat than the rest of the country, few grapes, and no olives at all.

Charcoal-makers. In the lower Apennines north of Rome are forests of chestnut, oak, and beech, in which people gather fallen wood for charcoal. A charcoal-maker seldom cuts down trees, but uses the branches and twigs that have been broken loose by the strong winds. He carries this wood home and



JAMES SAWDERS—COMBINE

In Florence, as in other cities, one sees many peddlers. This one sells flowers and sings as he jogs along.

time out-of-doors than the southern Italians. They go inside only to eat and sleep.

The northwest coast. On the map on page 269, find the great curve of the Apennines beginning north of the city of Pisa and extending southwest to a point just west of Rome. Notice the valleys and plains lying inside the curve.

In the northwestern part of this region differences in the soil make very great differences in the crops. Some of the soil is so poor that little more than thorny shrubs and oaks will grow. But in the fertile valleys, such as the valley of the Arno River, three crops will be seen growing in one field. Olive trees are planted in rows. Grapevines grow on wires from tree to tree in each row. And corn or wheat is planted between the rows. The soil of these valleys is rich because they are the bottoms of lakes that ages ago covered this area.

The mixed crop that can be grown in these lake beds keeps the farmers busy through much of the year. Wheat is

planted in late fall and harvested early in the summer. The season for picking grapes begins soon after the middle of August and lasts until the middle of September. Finally the olives are picked. The farmers work steadily and take an interest in the land, even though they do not own it themselves.

This northern region has disadvantages, too. The malaria mosquito breeds in swampy lowlands along the coastal plain. The only use made of these swampy areas is for cattle pastures.

Florence. On the map on page 269 locate the city of Florence on the Arno River. Centuries ago Florence grew to be a great city because trade routes meet there after crossing the Apennines from the Po Valley. Florence became a banking center and built up an important weaving industry which produced woolen goods. As the city became more prosperous, the government of the city invited architects to design and build churches, palaces and public buildings. Artists painted magnificent scenes on the plaster walls

of the churches or beautiful pictures on canvas. Still other artists did fine metal work, or sculpture in stone or marble. This art work is now known and admired the world over; almost every large museum in the world has several of the master works of the great Florentine artists. Florence is still a city of art and a great educational center.

Rome. Locate Rome on the Tiber River. Most visitors who look at the plain surrounding Rome wonder why a great city should grow up on this land of hills and marshy valleys.

At the time of the Roman Empire the land surrounding Rome was used for farming. But there are better reasons why the city was located here. The seven small hills on which Rome was built offered protection both from attacking tribes and from the floods of the Tiber River. Also, the city is situated almost in the middle of the west coast of the peninsula. Roads leading south from Genoa along the western side of the Apennines came to Rome as did the roads leading north from the toe of the boot. In addition, the Tiber, on which

Rome is located, reaches far into the peninsula to easy passes through the mountains.

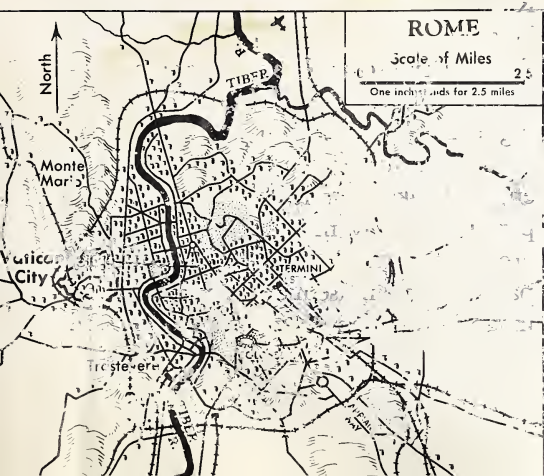
In such a location Rome needed many bridges over the river, especially during flood times. Roads, too, were necessary to link other important Italian cities to Rome. For this purpose the great Roman roads were built. Many of these were made of stone and are still in use today. Heavy traffic moves over their ancient paving stones, now covered with modern road surfacing.

Because there are few farms or truck gardens near Rome, food must be brought to the city by rail from other parts of the country. It is not a commercial or an industrial city but a capital city, with many things to remind one of the past.

Besides being the capital of Italy, Rome is important because it contains Vatican City. This city is not ruled as part of the country of Italy but is the independent center of the Catholic Church. The Pope, who is head of the Catholic Church, lives in Vatican City. Although it is tiny, about the size of a small city park, it has its own railroad, newspaper, and

JAMES SAWDERS—COMBINE

Ancient ruins near Rome. Notice that Romans used flat stones to pave their streets.





JAMES SAWDERS—COMBINE

St. Peter's cathedral in Vatican City. This building including the dome is made of white marble. Millions of tourists visit it every year.

radio station, and the largest cathedral in the world, St. Peter's.

As you would expect, the ancient city of Rome carries on a great tourist business. People from all over the world come to see the fine collections of art, the ancient ruins, and the Cathedral of St. Peter.

New farm land from swamps. Some years ago the Italian government began draining part of the large swamp areas southeast of Rome. The work was difficult and costly, but it succeeded in getting rid of mosquitoes and providing new farm land for settlers. The land was divided into fair-size plots, and a small, neat farmhouse was built on each. The farms were then sold to poor farmers.

The areas drained were only large enough to provide farms for a small number of the people needing them. Also the work cost more in money than the products of these farms will be worth for many years. However, Italy needs all the farm land that can be developed. Drainage work can and probably will be done in other swampy sections.

The land of the volcano. Long ago a great volcano erupted in Italy and buried

Pompeii and other cities beneath a thick layer of ashes and lava. Locate Mount Vesuvius on the map. Even today it is active, and often from its cone it puffs great white clouds of smoke. But Vesuvius, as other volcanoes, has its value too. When it erupts, lava and volcanic ash are spread around the countryside, making the soil more fertile. That is why every bit of land around the city of Naples can be cultivated. Crops are grown all over the surrounding plain and far up the sides of the smoking volcano. Because of the Mediterranean climate, wheat, olives, grapes, and oranges are grown in abundance. Here, too, we sometimes find three different crops growing in the same field. Grapevines may grow from tree to tree in orange groves, and vegetables are planted between the rows of trees. A dense population living in villages and towns is found at the foot of this dangerous volcano.

Naples. The city of Naples is the only good port of southwestern Italy. It has a large population of skillful but poorly-paid workers. With a good supply of electric power from the mountain streams, it has built up a few industries

such as metal work, shipbuilding, and textile weaving.

Southeast of Naples, which faces the Bay of Naples, stretches an area of plain. Of the Italian plains it is second only to the Po Valley in the value of its farm products. It exports large amounts of spaghetti, macaroni, wine, citrus fruits, and other farm products. The manufacture of macaroni and spaghetti from wheat is a large industry in Italy. Huge amounts of wheat are imported in order to satisfy the great demand of the Italian people for these favorite foods.

Naples is a beautiful city with its great harbor and the green farm lands surrounding it. It carries on much trade with tourists, who come to Naples to enjoy the scenery and the climate and to see the world's most famous volcano.

ITALY'S ISLAND POSSESSIONS

Sicily. The island of Sicily is separated from Italy by a narrow strip of water, at one place only two and a half miles wide. Again and again over many centuries both Sicily and Sardinia were conquered and held by other countries. Often the inhabitants revolted and took the law into their own hands.

Almost all of the people of Sicily are farmers. The farm lands are excellent, but they are too small for the large numbers of people trying to make a living on them. So even though good climate and good soil bring abundant harvests, the people do not grow enough on their land to meet their needs.

The mountains along the north coast are the highest on the island, and only a narrow coastal lowland can be cultivated. This is crowded with orchards of olives, grapes, oranges, and lemons. The port of Palermo on the northern coast handles much of the trade for the island.

Towering above the east coast is the great volcano, Mount Etna. Like Vesuvius, it is feared by the inhabitants near by. The fertile lava soil surrounding the volcano makes this the greatest citrus growing district in all Italian lands. See whether this statement agrees with the map on page 253.

The plain south of Etna also has very good soil. But like many areas on the peninsula, it needs draining in some spots and irrigating in others. The swamps are breeding grounds for the malaria mosquito.

JAMES S. W. & S. COMBINE
A view of Naples with Mount Vesuvius in the background. Breakwaters built of rocks keep waves from washing up over the coastal highway.



From the high mountains of the north, the land slopes gently to the south. Here the land is used for wheat because of a dry climate. The farmers live in the villages and leave broad stretches of farm land without a single house. To the traveler, especially in summer when the land is dry and bare, the countryside can seem very lonely.

Sicily has great difficulty in trading its products. About a hundred years ago the island people grew large fields of cotton. Then other countries, including the United States, began to sell cotton more cheaply than Sicilian farmers could sell it. The cotton planting in Sicily stopped almost completely. About the same thing happened with sulfur. Until the large sulfur deposits of Texas were found, Sicily did a good business shipping this important yellow chemical to factories in many nations. Today sulfur is still the chief export of the islands. Yet it is becoming harder and harder to find markets where the sulfur from Sicily can be sold for less money than the Texas sulfur.

Sardinia. Though Sardinia has almost as large an area as Sicily, it has not quite a fourth as many people. Even so, the present inhabitants have only a poor living. Like Sicily, the island is mountainous and has a Mediterranean climate. But in Sardinia the forests have been partly destroyed by the grazing of sheep and goats, and nothing has been planted on the bare slopes to prevent erosion. In winter heavy rains bring floods that cause landslides and wash away much valuable soil.

The narrow coastal lowlands of Sardinia have the same disadvantages as those of Sicily. Some are too dry and need irrigating. Others are too wet and

need draining. The malaria mosquito thrives in the damp, swampy lowlands and causes fever among people who dare to work there.

The people of Sardinia have changed little in hundreds of years. The roads are so narrow and rocky that the people still use the small, slow, two-wheeled cart. Flour mills still grind wheat between old millstones.

The Italian government has tried to help Sardinia by supplying electric power from mountain streams for small industries. The dams built for the powerhouses save water for irrigation during the frequent drouths. At present, valuable deposits of lead and zinc are being mined. But the ores are shipped to Italy for refining. Thus these mines do not provide income for many people in Sardinia, who so badly need additional ways of making a living.

ITALY'S PROBLEM

Now do you see the problem that Italy faces? The amount of good farm land is too small to supply food for its population.

The Italian government has tried several ways of helping its large population of poor families. It has encouraged emigration. Many Italians, tired of the poor living they made in Italy, have moved to other countries, especially the United States, Argentina, and southern Brazil. Emigration has helped but has not solved Italy's problem. The number of people moving to colonies or to other countries is always small compared with the number left in the homeland. The children born in Italy soon fill the places left by the emigrants.

Also, Italy has tried to improve living



JAMES SAWDERS—COMBINE

The entrance to a sulfur mine in Sicily. Electric machinery is used inside the mine.

conditions by providing the farmers with more farm land. The government has bought many of the large estates and divided them up into small farms. It has drained marshes and swamps and irrigated dry areas. It has also attempted to educate the people of the peninsula in the best methods of farming so that they can obtain larger crops from the same amount of land. But draining land, as you have learned, is expensive, and the draining and irrigating together have yielded too little additional farm land to meet the needs of the people.

The main hope for Italy is to develop industries in the southern part of the country and to increase its trade with foreign countries. The industries in the Po Valley, as you have seen, use skilled labor and much electric power. But most of the raw materials needed, especially the great quantities of coal, iron, cotton, oil, and lumber, must be imported. Italy cannot continue these in-



JAMES SAWDERS—COMBINE

Harvesting grain on a new farm south of Rome. Notice the drainage canal and gate.

dustries unless it can trade freely with other nations. Trade is necessary also in order that Italy can sell its manufactured goods. But whenever other nations can furnish the same products at less cost, Italy is bound to lose its markets.

Italy must import food from other countries. To pay for imported food and raw materials for its factories, Italy must sell its manufactured goods. These must be produced at low cost in modern factories. If Italy's goods are highly taxed by the nations that import them, their prices will be so high that they cannot be sold.

If Italy is successful in developing more industries and in finding good markets for its products, its people can have a better living. But even a great increase in manufacturing may not solve Italy's problem if the population continues to increase rapidly. The more people who must share the products of a country, the less there will be for each.

What Have You Learned?

How many likenesses do you see between the people of the Iberian Peninsula and the people of Italy? Your list can begin like this:

Both live on hilly and mountainous peninsulas.

In both countries most of the people work hard to obtain a bare living.

KNOWING NATURAL REGIONS

Across the top of your paper write the following headings: Po River Valley, Italian Alps, Apennines, Adriatic Coast, and the Northwest Coast. Under each heading copy the items that are found in that region. Some may be found in more than one region.

a plain	fairly cold winters
a delta	a dense population
hot summers	hydro-electric power
olive trees	silkworms
orange groves	malaria mosquitoes
hemp plants	large dairy farms
deep lakes	steady supply of water
fig trees	chestnut forests
marshy valleys	corn and wheat farms
sulfur	long summer drouths
grapevines	three crops in one field
many factories	a farm population
lemon trees	bare and dry countryside
summer rain	snow-capped peaks
tunnels	high mountain pastures
mild winters	woolen and cotton mills

SEEING LIKENESSES

There is something similar between each item mentioned in the pairs given below. State what the likeness is. (Example: Agriculture in Italy and in

Argentina—both use a system of tenant farming.)

- a. Northern Italy and northern Spain
- b. People of northern Italy and the people who live north of the Alps
- c. Turin and Barcelona
- d. The problems of people in southern Italy and in Puerto Rico
- e. The chief problem of farmers on the Iberian Peninsula and on the Italian Peninsula.
- f. Madrid and Rome
- g. Sardinia and Sicily

THINGS TO THINK ABOUT AND DISCUSS

1. Why did Italy become a meeting ground for the east and the west? How did travelers from the Orient reach the cities of Venice and Genoa in early times?

2. What are the reasons why so many of the Italian people are poor today?

3. Why are the mountain passes of the Alps so important?

4. Why is it so difficult to cross Italy in going from coast to coast? How would you go from Genoa to Venice?

5. Tell at least three ways in which the northern part of Italy differs from the rest of the country. Why is it more densely populated? How can modern methods of using the land make a region more productive?

6. Why is hydro-electric power so abundant in the Po Valley?

7. How has swamp land in Italy been made productive? Why does it take so many years for such land to become profitable?

8. Why have a number of European nations been interested in controlling Trieste? Which countries especially want to possess Trieste? How is Trieste governed today?

9. Why do many people live at the foot of Vesuvius?

10. Why are the Sicilian people so poor even though their harvests are abundant? Why have they had such difficulty in trading their cotton and sulfur?

DO YOU KNOW THE CITIES OF ITALY?

The Italian cities have long been famous for their beauty and their history. Which ones are described below?

- a. This is one of the most interesting cities in the world, with a special traffic problem all its own.
- b. This city, often called the Detroit of Italy, has no nearby sources of coal and iron.
- c. This is a tiny city within a city, but people come from all over the world to visit it.
- d. This was a banking center but is now known for the art work of its churches, palaces, and museums.
- e. This city, located in the Po Valley, is one of the most important commercial cities of Europe.
- f. This is Italy's largest port and was the boyhood home of Columbus.
- g. This has been called the "city of seven hills." In ancient times it was said that all roads led to this city.
- h. This is a great harbor near the world's most famous volcano.

Now write your own quiz program, using other cities that you have studied in this book, making clear the country in which the city is located.

MAP READING

Locate and name on the map of Italy:

- two mountain systems
- a city on the "heel of the boot"
- a British possession south of Sicily
- the river on which Rome is located
- a city located near the Riviera
- a French possession north of Sardinia
- the Italian city farthest south
- the Italian city farthest north
- two cities that border on the Adriatic Sea

USING THE SOIL

1. In general people grow crops in regions where the soil, rainfall, climate, and elevation are favorable. What conditions are needed to grow corn, wheat, rice, olives, and grapes? Which regions in Italy grow each of these products? Are they suited to the regions in which they grow?

2. How are the mountain valleys of Italy used?

3. Why are there fewer goats and sheep on the mountain pastures than there used to be?

SOLVING ITALY'S PROBLEMS

State three ways in which the Italian government has tried to solve Italy's problems. Why is trade so necessary for Italian industry and Italian prosperity? Why is it often difficult for Italy to find markets for its manufactured products?

DESCRIBING HOW THE PEOPLE WORK

Explain each of the following in a written paragraph:

1. How cattle and sheep are pastured in winter, spring, and summer.
2. How raw silk is obtained.
3. How charcoal is obtained.



JAMES SAWDERS—COMBINE

Athens. Below the ruins of ancient Greek temples, modern street cars move along paved streets. Notice the scattered patches of scrub forest growing around the bases of the hills.

Greece

You have learned that the lands around the Mediterranean Sea were the center of western civilization in ancient times. Western civilization first developed in Egypt and western Asia. It then spread to Greece, and later to Italy.

Long before the time of the Roman Empire, Greece was a great world power. About twenty-four hundred years ago, the city of Athens in Greece was the leader of the Mediterranean world. The people were well educated and for this reason

were admired and respected by people in other lands. Beautiful sculpture, temples, and theaters were to be seen in the city. Some of the wisest men of all time lived in Athens.

A nation of sailors. In the small country of Greece few places are more than forty miles from the coast. The sea therefore became the natural means of communication for the Greek people. Ships from Athens traded all over the known world. At first they sailed from

point to point along the coast and were seldom out of sight of land. But little by little men learned the art of guiding ships over larger stretches of water. The sea became the highway between the separate groups of people living in Greece and around the eastern Mediterranean. By sea they exchanged ideas and traded with one another. Also, they sailed westward and made settlements in Sicily and southern Italy.

Thus the Greeks became great sailors and gained part of their living by trade. They also did some fishing, but not so much as the people of Portugal because the Aegean is not a good fishing ground.

A doorway to Europe. Sometimes the Greeks traveled to and from the rest of Europe by land. From central and eastern Europe old trade routes reached across the mountains into Greece and ended at the Aegean or Mediterranean Sea. Today most goods shipped to the Far East from the countries of eastern Europe go through the Greek seaport of Salonika. Through what port do these countries ship their products to western Europe and the Americas?

The fall of Greece. Ancient Greece was never a united nation, even at the height of its power. The country is broken up by mountains and by the sea, and the Greeks have lived chiefly in small groups, each group separated from the others in the small mountain basins or on small islands in the ocean. In many of the great battles of ancient times the Greeks were victorious because the cities agreed to fight together against any enemies who attacked the country. But in times of peace the Greek cities had little to do with one another. Finally they began to quarrel among themselves, their power was broken.

Many poor people. Today Greece is a poor country. It has few resources to provide a good living for its population. It lacks coal and iron for industries, and has not been able to afford dams and power plants for hydro-electric power. Greece grows the usual Mediterranean crops, but, as in Italy, the food crops are not enough to meet the needs of the people. Outside the cities, the Greeks have always been shepherds, but most of the shepherds get only a poor living from their herds.

Erosion. At one time Greece was covered with forests, but millions of trees have been cut. In the past, much timber was used for firewood and for building houses and ships. No young trees were planted, and often sheep and goats were allowed to range over the countryside eating everything that was green. Also, farmers cleared away many trees and planted grain on steep hillsides. The rain water rushing down these slopes cut gullies and washed away much of the good soil. Today large parts of Greece are wasteland.

The problem. How can the Greek people obtain a good living in a land with few resources left?

A Greek baker delivers his bread from door to door on an island in the Aegean.

MEERKAMPER FROM MONKMEYER



What the Map Tells about Greece

Like the two peninsulas which you have just studied, Greece is also on the continent of Europe, but it differs from them in certain ways. Iberia is a square peninsula with a regular coastline; it is high in the interior but has few mountains. Italy is long and narrow with a mountain backbone; it, too, has few inlets. But notice on the map (page 269) that Greece is crossed by short mountain ranges with small mountain basins between. Its coast has numerous river deltas, gulfs, and excellent harbors. The country includes many islands in the Aegean Sea.

Many mountains, few plains. When you think of Greece, you should always think of mountains and the sea. In many places the lower foothills of mountains rise directly from the water. Among the mountains are small lowlands, especially delta plains where the rivers flow into the sea. Notice on the map that Greece has few really large plains.

The southern end of the peninsula is shaped somewhat like a hand with only three fingers. This is the Peloponnesos. Once it was joined to the mainland by a narrow isthmus at the city of Corinth. Because a canal has been cut through the Isthmus of Corinth, the Peloponnesos is now an island. Notice on the map that it is almost covered with a large block of mountains. From the middle of the peninsula, ridges run out into the sea forming the thumb and three fingers. The most important lowlands lie along the northwest coast where the mountains do not extend quite to the sea.

Next locate the capital city, Athens, on

a peninsula east of the Isthmus of Corinth. From Athens, ranges of mountains extend northwest and then northward through the middle of the peninsula. These high, wide ranges, called the Pindus Mountains, are covered with forests. They are one of the few timbered areas left in Greece. To the west of the Pindus Mountains the land slopes to a gulf which has a very narrow opening to the sea. What is the name of this gulf?

Just east of the Pindus Mountains is Thessaly, a region of river plains and mountain basins. Locate the high peak called Mount Olympus. Just south of this mountain a river breaks through to the sea in a beautiful valley. Legends of the ancient Greeks called Mount Olympus the home of the gods. Perhaps you remember reading some of the legends about Zeus, Athene, and other Greek gods and goddesses. The Greeks also had legends about other mountains in their country or on islands in the Mediterranean Sea.

Find Macedonia, the part of Greece that extends eastward along the mainland of Europe. Rivers flowing across Macedonia have built up level plains on their way to the Aegean Sea. On the map locate the city of Salonika. The plain on which it lies, although swampy at certain times of the year, is an important farming region. The ancient route from Athens overland to Macedonia passed through Thessaly and on past Salonika. Traveling overland was easiest along the river plains and basins.

Notice that southeast of the city of



JAMES SAWDERS—COMBINE

On a Cyclades Island. Strips of canvas are tied between the arms of these windmills to catch the wind. What does the vegetation tell you about the climate in this area?

Salonika lies another peninsula with three fingers pointing out to sea. East of Salonika, coastal lowlands stretch away to the border of Turkey.

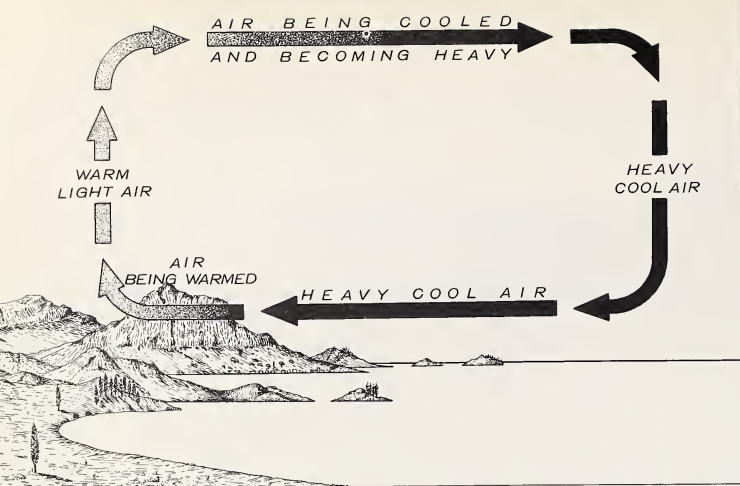
Numerous islands. Let us look next at the islands in the Aegean Sea. Lying offshore southwest of Thessaly are the Northern Sporades. The word *sporades*, which in Greek means “scattered,” describes these rugged islands very well. They are almost without inhabitants; the land is so rocky that people cannot raise enough food to live on.

South of the Sporades is the long island of Euboea. Farther to the south and east are the Cyclades, a group of islands that are scattered across the entrance to the Aegean. South of the Cyclades, about halfway between Europe and Africa, lies the long, narrow, mountainous island of Crete. Perhaps you have read the legends about Theseus. It was on Crete that Theseus, according to

the legend, killed the Minotaur, a monster half man and half bull. Still other islands belonging to Greece lie in the eastern Aegean Sea.

A school for sailors. It is thought that the Aegean was the body of water on which Europeans first learned to sail ships. In a sea with so many islands it is almost impossible to be out of sight of land. Even when the islands cannot be seen, huge clouds that hang over them like white caps show their position. With island signposts, men were not afraid to cross the water.

The wind also helped these early sailors. Before sailors knew how to sail against the wind, they would put out to sea only when a wind was blowing in the direction they wished to go. In the Aegean a breeze blows seaward every morning and landward every afternoon and evening. Using the morning breeze, the sailor could go out on the water to



fish or to visit offshore islands and then could return home with the evening breeze.

Today we know the cause of this breeze. During the day the land is much hotter than the sea. By noon the air over the land has become warmer than the neighboring air over the sea. Cool air is heavier than warm air. The cool, heavier air pushes in under the warm air, forcing the warm air to rise. This flow of the cool air toward the land in the afternoon and early evening is the landward breeze.

After the sun goes down, the land cools rapidly. At some time during the night the temperature of the land becomes lower than the temperature of the sea, which does not change very much. Now the wind changes its direction. The cool air above the land moves out to sea and pushes up the warmer sea air. There is a gentle offshore breeze, especially just before sunrise. This continues until well into the day when the heat of the land once again causes the wind to change its direction.

Mediterranean climate. Almost all of Greece has a Mediterranean climate. Remember that in such a climate rains

come in winter; drouths, in summer. Only very small areas of the world have a Mediterranean climate. It is found on the west coasts of the continents between 30° and 40° N and S. This is true of the entire region that borders the Mediterranean Sea. Look at Eurasia and Africa on your classroom globe. Together the two make up one great continent. The Mediterranean Sea is a large gulf extending into the west coast of this great continent. The largest area of Mediterranean climate in the world is the region that borders the Mediterranean Sea. From Portugal and North Africa in the west it extends eastward to the country of Israel and northward to include parts of the shore of the Black Sea. What part of South America has a Mediterranean climate? What part of the United States?

Floods and drouths. Because so many forests of Greece have been destroyed, severe floods often come during the winter and spring. Forests slow up the run-off of water during a rain. The covering of fallen leaves holds the rain on the slopes and allows it to sink into the ground. Later this ground water comes to the surface in springs, and helps to

make the flow of streams regular. With the forests gone, the streams in the highlands become rushing torrents during the rainy season. They bring gravel and sand with them down to the lowlands, piling it up in fans along the foothills. Where the streams flow into the sea, delta plains are built up. Today some towns that once stood near the ocean are located many miles inland.

Summer is a time of low water. During the spring and early summer some of the rivers dry up. Others have enough water to irrigate surrounding farm lands until the winter rains come again.

Cut-over land. Much of the area of Greece consists of cut-over land—rough, bare, rocky slopes crossed by gullies. In these areas the soil is usually so thin and poor that the people cannot make crops grow. Only small, thick-leaved shrubs and dwarf trees can live through the long, dry summer.

FARMING, GRAZING, AND FISHING

Today the majority of the Greeks make their living by farming. The farm lands are of two main kinds: the flood plains of rivers and the hillsides.

Kinds of farm lands. The flood plains are often swampy in winter but so

dry in summer that they must be irrigated. Here the farmers plant chiefly corn and vegetables. They also grow different kinds of plants that are used in making drugs. Of some of these plants the valuable part is the flower; of others, the leaves or the roots or the seeds.

Many hill slopes are covered with orchards of olives, figs, and oranges. The olives and figs are grown on the less fertile soil, perhaps high on the hillside or at the tops of the alluvial fans. These trees, being native to the Mediterranean region, grow in almost any kind of soil. The orange trees, however, can be raised only on the lower slopes where the soil is good. The highest and steepest mountain slopes are used not for crops but for grazing.

On many hillsides the farmers have cut level terraces and built stone walls, which rise from one terrace to the next and hold the soil in place. On these dry lands barley and winter wheat are grown. Vineyards, too, are planted here, and the soil is plowed, harrowed, and manured many times during the year. The vineyards are usually located on the southern slopes, where they will receive strong sunlight, which gives the grapes a good flavor.

Wheat is also planted in the valleys

JAMES SAWDERS—COMBINE

On a Grecian farm near Corinth an owner inspects his potato field. Notice the patches of white on the hillside where the soil has been washed away by the rain.



and on deltas that are not irrigated. The crop is planted in the fall after the first rains have brought moisture to the soil. It is harvested the following June during the hot, dry weather. Then, during the summer months, the fields are plowed and harrowed to make a thin layer of very fine soil on the surface. This layer helps to keep the moisture in the soil from evaporating. This method of dry farming has been used in Greece since ancient times.

Farming regions. The two best farming regions of Greece are the plains of Thessaly and Macedonia. The first is known as the "grain bin" of Greece because of the large amounts of wheat and corn produced.

Before World War I only poor crops came from Macedonia. After World War I the boundaries between Greece and Turkey were changed. This left large numbers of Greeks living in Turkey, and large numbers of Turks living in Greece. These people, of course, wanted to return to their own countries. About two million Greeks came home, while hundreds of thousands of Turks moved out. Many of these Greeks were intelligent, hard-working farmers. They

settled in Macedonia and made farms in new areas. Villages sprang up everywhere, and careful use was made of the land. Now rice, cotton, and tobacco are harvested in addition to the regular Mediterranean crops. After these new farmers began to grow tobacco, Macedonia produced three times the quantity it had raised before.

Farming methods. Most of the farmers in Greece still use the farming methods of their ancestors. It has been said that the Greek farmer is poor because he does not use fertilizers and machinery to help him improve his land and obtain larger yields. We must remember, however, that the Greek farmer, being poor, cannot afford to buy these things. This is a situation from which it is difficult for him to escape. His land does not produce a large enough crop for him to sell part of it for cash. And unless he has cash to buy fertilizer and machinery, he cannot make his land produce better crops.

Food crops. Most of the food grown is eaten at home, and there is little surplus for export. Indeed, though wheat is a chief crop, not enough is raised to meet the needs of the people. Much wheat must be imported.

When anyone speaks of "oil" in Greece, he means olive oil. This oil is widely used instead of butter, and it supplies the needed fat in the people's diet.

The grapes produced are pressed into wine. But people outside of Greece seldom care for this wine. It has an unusual flavor because of the Greek custom of adding pine resin. The Greeks like this flavor, and believe that the resin helps the wine to keep longer. But they cannot export the wine because people of other countries will not buy it.

A Greek farmer uses a simple steel plow pulled by a horse and mule to plow his field.

CUSHING





WIDE-WORLD PHOTOS

In the picture at the left, women sort ears of corn in a farmyard in northern Greece. In the picture at the right, a Greek family strings tobacco leaves on sticks and hangs them to dry.

Export crops. Greece raises some crops for export as well as for use within the country. Among the crops that Greece exports are tobacco, dried currants, raisins, and figs. For a long time, before the farmers planted tobacco, the currant was the main export crop of Greece. The country depended on it for income as Japan depended on silk. This was very risky because the fruit was laid out to dry near the beginning of the rainy season. If the rains came a little before they were expected, the crop might be ruined. Then, without the money from the export of currants, the people could not buy wheat and other foods grown elsewhere. Today, tobacco makes up almost half of Greece's exports.

Countries that do not have enough good farm land sometimes use some of their best land for export crops which they can sell at a good price. With this income they can buy much more of the food they need than could be grown on the land used for the export crop. With the money from tobacco or currants or some other crop that pays well in world markets, the Greeks can buy several times the amount of wheat that could be grown

on the land used for the export crop. When a country, such as Greece, has too many people for its good farm lands, this is one way to help solve its problem.

Currants. The currants grown in Greece are not the tart little red berries known in America as currants and used in making jams and jellies. In Greece the currant is a small, black, seedless grape. After these grapes have been dried, they look like the small, dried raisins which we use in cakes and puddings.

Currants are grown on the Ionian Islands and on the northwestern part of Peloponnesos along the Gulf of Corinth. This kind of grape does well on the silty soil and in the cool, rainy winter climate of the west coast of Greece. The vine requires very little care. If the farmer wants to use his fields for other crops, the currant can be grown beneath trees or larger grapevines, since shade does not keep it from growing.

Tobacco. Tobacco is grown in summer, mainly on the low plains of Macedonia where water is close to the surface. It is not grown in great fields such as we see in Kentucky and Virginia. Instead,



CUSHING

This Greek shepherd is driving his herd of mixed livestock to market in a near-by town.

it is planted in little patches here and there wherever suitable soil is found. Quality is the important thing in Greek tobacco, and some of it is the finest cigarette tobacco in the world.

When the leaves are about the size of a child's hand, they are picked and threaded like beads on a long string. Then the strings of leaves are stretched on racks to dry in the sun. Most of the best grades are sold to buyers from America, who will pay high prices.

Grazing. The herding of sheep and goats has long been the way most Greeks have made their living. In ancient times, if a war swept through the country, men could drive their flocks and herds into the mountains and hide them. This was better than having to leave a fine crop to be eaten by an army, even though the army might be friendly. A farmer who had seen his grain, grapes, or olives eaten by someone else was likely more and more to depend for his living upon herding.

Today Greece has vast flocks of sheep, and a larger number of goats than all the other Mediterranean lands put together.

Mules, horses, and donkeys are also raised. Many of the pastures are on the higher and steeper mountain slopes, but sometimes lowlands on which crops could be raised are used for grazing.

On the plain of Thessaly the breeding of horses is an important occupation. This has been true ever since ancient times when horses from Thessaly were used in wars and were famous for their strength and speed. Cattle or dairy cows are scarce in Greece. They need wetter pastures than sheep and goats, and the pastures of the Mediterranean lands are usually too dry in summer.

Nomadic shepherds. A large number of people in Greece still have no permanent home but travel back and forth from the mountains to the plains with their flocks of sheep and goats. In summer, when the plains have dried out and the grass withers, they move to mountain pastures and pitch their tents. The herds are grazed on the land around the camp until the grass is gone. Then the shepherds seek new pastures. In the fall they pack up their belongings and tie them on the backs of their horses and oxen. Then they move slowly down the winding trails to the plains.

Mountain dwellers. Some people stay in the southern Pindus Mountains all year round, getting a poor living from herding animals and growing a little food in the thin, rocky soil. Ever since ancient times, the mountain people have tried to make up for what they lacked by attacking and plundering the villages on the plains. This, of course, made enemies of the two groups of people. They seldom agreed on anything, least of all on the kind of government the nation should have. Even today, the Greek nation has much trouble with the mountain people.

They wish to do much as they please and to live independent of the villages below them.

Occupations on the islands. Many fishermen live on the islands in the Aegean. Fishing offers the best means of making a living on these small, bare, and rocky islands. Wherever the soil is good enough, one finds small farms with the same crops as on the mainland. The same hand methods of farming are used.

Some of these islands are almost useless because of dry weather and high winds in summer. Also, their forests are almost entirely gone.

INDUSTRY AND TRADE

In addition to its farm products—currants, tobacco, and olives—Greece exports nickel, zinc, lead, and an excellent marble quarried near Athens. Before World War II Greece was manufacturing textiles, carpets, leather goods, and chemicals. It had a larger amount of shipping

per person than has either Spain or Italy.

But during the war many of the Greek railroads were torn up and the tunnels that had been cut through the mountains at great expense were destroyed. Ships, which the Greeks had used in ocean trade, were either captured or sunk. Thus the Greeks were left with few good means of transportation. This is a real disaster in a poor country that has always depended upon ocean trade for a large part of its living.

Athens. Much of the trade of Greece passes through Athens and Piraeus, its port. Besides being a famous old city, Athens is in a very good location for modern trade. Notice this location on the map, near the middle of the Aegean Sea and also near the Corinth Canal. It is near the main sea routes from the Black Sea to the western Mediterranean and from the Suez Canal to the Adriatic. Ships traveling west from Suez to the Adriatic often go by way of the Corinth Canal. Since 1900, Athens has grown

A ship sails through the Corinth Canal in southern Greece. This canal, which is six miles long, was cut through rock at great expense. Why was it worth the expense to dig the canal?

HOLMES FROM GALLOWAY



from a small city into an important port, chiefly because of its location.

Salonika. The other important Greek seaport is Salonika, which has become a port for several reasons. When the Greeks from Turkey first came to the plains of Macedonia, they found that much of the land was swampy. The dreaded mosquito was everywhere. Then American engineers with their mighty dredges were called in. These huge machines, scooping up tremendous loads of earth, dug canals and deepened other waterways until the swamps had been drained. Afterwards hundreds of square miles of rich farm land were settled eagerly by homeless Greeks. Their farm products now pour into Salonika to be marketed in Greece or shipped to other countries.

In addition to being the important seaport for northern Greece, Salonika is a free port for nations north of the Greek border that lack ports of their own on the Mediterranean or Aegean. Into this free port, ships can bring cargo for Romania, Bulgaria, or one of the other inland countries, without having to pay a tax. What other city is a free port for central and eastern Europe?

IMPROVING LIVING CONDITIONS IN GREECE

Greece is a poor country, even worse off than southern Italy. The people have always been separated by the mountains and the sea into small groups which have had little to do with one another, even when they are in neighboring valleys. Their feeling of separation has kept the nation weak for centuries and today is helping to keep Greece poor.

It is hard for groups of people who do

not know one another to work together. The herders, whose sheep and goats are overgrazing the mountain slopes and killing off the forests, do not know that overgrazing destroys soil and causes floods and drouths in the farming regions. Nor do the farmers understand the problems of the herders.

Improvements needed. Greece needs a means of uniting the separate groups of people that dot the land. It needs good highways and railroads so that both farmers and herders can sell whatever surplus they can raise. It needs more telephones and radios. It needs more schools to teach its people how to take care of their land and make wasteland productive. It needs plenty of ships, for without them the Greek people are almost entirely cut off from the rest of the world.

From its own soil, Greece cannot produce enough food for its people. It needs to plant young forests in areas where crops cannot be grown, in order to prevent erosion and floods in the farming areas. Dams could be built to store water in reservoirs during the rainy season for irrigation during the dry season. More land could be drained. Fertilizers, farm machines, better seeds, and better methods of farming are needed. All this would conserve the good farm land remaining and make some of the wasteland productive.

Greece also needs to teach its people how to produce more goods for export. If all the farmers of Greece could raise valuable export crops on part of their land, they would be better off, for they would then have income to buy the things they cannot raise themselves.

The need for money. To do all these things requires money. Greece



METS FROM CUSHING

A boatload of olives and tobacco is exported from an Aegean island. The loaded lighter is being towed by a small motorboat to a foreign freighter anchored in deep water offshore.

cannot buy the machines and pay for the work needed to make improvements. The only way Greece can get the money needed is to borrow it from other countries. By borrowing money, Greece can improve its farms, buy machinery, build railroads and highways, start up small industries, and produce much more goods for export. With money received from the exports, it can pay back the loans.

Too many people in the land. At the end of the chapter on Brazil you read that poverty actually has kept most of the Brazilian people poor. The people of Brazil have been too poor to develop

the resources of their great country. In Italy and Puerto Rico you have seen regions in which the people are poor because there are too many people and not enough land to go around.

In Greece, too, there are far too many people for the land. The people of Greece do not have the money needed to develop new resources or to make the best uses of the resources it has. It is believed that loans to Greece will help the country a great deal. However, even the best use of Greece's resources may not solve the problem if the population continues to increase.

Teaching Yourself

In Greece olives and figs are grown at the tops of alluvial fans. Draw a picture to illustrate what is meant by an alluvial fan. If you do not know how to begin your drawing, look at the diagram in your book on page 105. After you are certain that your drawing is correct, make an alluvial fan out of papier-mâché or clay.

THINKING AND WRITING

1. Write a paragraph that will tell clearly just what the chief problem of the Greek people is. Discuss the poverty of the people and the natural resources of the country.

2. The living conditions of the Greek people will be improved only if Greece can obtain the things it needs. Many improvements are needed in Greece. List at least eight of these on your paper.

3. Write a paragraph telling how the Greek people might solve their problems.

4. Write a paragraph telling what a *free port* is.

A COMPLETION TEST

(Do not write in this book.)

1. The people of ancient Greece became good sailors because—.

2. The Northern Sporades are almost uninhabited because—.

3. Forests help to prevent floods because—.

4. Terraces on hillsides are of great value because—.

5. Greek vineyards are usually located on slopes that face south because—.

6. Thessaly is known as the "grain-bin" of Greece because—.

7. The Greeks have difficulty in finding foreign buyers for their wine because—.

THE EXPORTS OF GREECE

Some of the products listed below are now exported by the Greeks, and others are not. Copy on your paper the ones that are exported.

tobacco	olive oil	corn
carpets	dried currants	olives
raisins	spaghetti	wheat
nickel	textiles	jute
lead	leather goods	rice
cotton	citrus fruits	silk
marble	macaroni	zinc
wine	chemicals	figs

UNDERSTANDING REASONS

1. Why was the Aegean Sea an excellent school in which the Greeks could learn to be sailors?

2. Why is erosion such a serious problem for the Greek people? Name other countries in which erosion is a serious problem.

3. Why is it almost impossible for the Greek people to solve their problems without help?

4. Why was the herding of sheep and goats the safest way for the ancient Greeks to make their living?

5. Why do the mountain people and the village people find it difficult to agree?

6. How has World War II damaged Greek foreign trade?

7. Why is the location of Athens an excellent one for foreign trade?

8. Why has Salonika become an important port?

9. Why do many Greek farmers raise currants and tobacco for export rather than food crops for their own use?

10. Why is it difficult for the Greek farmer to use modern farming methods?

11. Why do too many goats in the mountains of Greece hurt Greek farmers on the plains?

DESCRIPTIONS

1. Describe the mountain ranges in Italy, Spain, and Greece. To illustrate your description, make three sketch maps to show how the mountains in each country are situated. Use different colored crayons to indicate lowland plains, hills, high mountains, and mountain basins. Include map keys.

2. Describe the way tobacco is grown, picked, and dried in Greece.

3. Describe the method of dry farming used in Greece.

LAND AND SEA BREEZES

If you pour water into a can of oil, the water, which is heavier, sinks to the bottom, pushing the oil to the top. This is what happens when cool air meets warm air. In the Aegean the morning sun heats the land. By noon the air above the land also becomes warm. The cool air over the ocean moves in under the warm air above the land, pushing it upward and taking its place.

As the warm air rises, it gives off moisture. Clouds may form above the land. Why? (Can cool air hold as much moisture as warm air?)

The diagram on page 290 shows how the air moves over the Aegean to cause the afternoon breeze. Draw a diagram to explain the morning breeze.

WHY CITIES GROW

Copy each point in the following list which you think helps to make a city large and important. Be ready to prove that each point you have chosen really helps.

Wide-awake people

A central plaza

Nearness to a canal

A port where goods can easily be imported or exported

Nearness to productive regions

Good railroads

Warm climate

Water power

Place that was important in history

Well-paved highways

Value as a resort, summer or winter

Pure water

Nearness to many lakes

High altitude

Mountains and hills

Nearness to densely populated regions

Healthy conditions

Being the capital city

From the maps in this book choose five cities of over a million population and write their names on your paper. Below each city write the reasons why it has become large and important.

MAP READING

1. The shortest steamship route from the Suez Canal to Venice passes near a capital city and through a canal. What are their names?

2. Using the map on page 269, tell as much as you can about transportation in Greece. (Remember that modern highways, as well as railroads, are difficult and expensive to build through rugged mountains.)



CUSHING

The land in the Tell is covered with cultivated fields, orchards, and excellent pasture lands. This picture was taken looking south across the Tell to the high Atlas ranges.

The North African Fringe

The southern shores of Europe are not the only lands bordering the Mediterranean Sea which we shall read about. There are others south and east of that sea. Most of these have a Mediterranean climate and, of course, Mediterranean vegetation, for vegetation depends on climate. In this book, however, we shall study only those other Mediterranean lands that are in Africa.

A fringe of land. Most of northern Africa is a vast desert, the Sahara. Except in the country of Morocco, the true

Mediterranean lands are quite narrow, like a fringe along the shore. For this reason we shall call these Mediterranean lands the North African Fringe. The Fringe extends along the coast of North Africa all the way from the Atlantic Ocean to the western border of Egypt. It is wide in the country of Morocco but becomes narrow in the colony of Libya. It disappears entirely in Egypt, where the desert reaches the Mediterranean.

Differences from other African regions. The climate of the North African

Fringe is similar to that of Spain. Most of the rain falls in winter. Thus, only those plants grow there that are able to live during the long, dry summer. The Fringe is quite different from the Sahara to the south, which is a region of gravel and sand, dry all year round. The Fringe differs also from the vast stretches of jungle, forest, and steppe south of the Sahara. Because the Sahara, the largest desert in the world, is a natural barrier very difficult to cross, the Fringe is separated from the rest of Africa.

Desert peoples. Two native peoples are found in North Africa, the Arabs and the Berbers. Both these peoples belong to the white race and worship Mohammed, an ancient prophet. Worshipers of Mohammed are called Moslems.

The Arabs came originally from the peninsula of Arabia and neighboring lands. Until they used the camel as a domestic animal, they herded their flocks of sheep on foot. But with the camel, they were able to travel long distances. They moved over the lands extending across North Africa and even into Spain. An Arab shepherd thinks nothing of rolling his tents, packing all his belongings on his horses and camels, and setting off with his flocks for greener pastures.

For thousands of years Berber shepherds have lived in North Africa. At first they lived chiefly along the Mediterranean shore in western Egypt. But after they adopted the camel from their neighbors, the Arabs, and learned to plant date palms, they spread across the Sahara to the west and south. Today they are found all the way from the Mediterranean coast southward into the edges of the desert.

Unlike the Arab, the Berber does little wandering with his herds. He prefers to

stay near home. When foreigners have invaded the country, the Berbers have taken their flocks and hidden in the mountains.

A Mediterranean region. The Fringe is a part of the Mediterranean region rather than of the desert. This coastal section lies just within the area that receives winter rains. In winter great masses of cold air puff out of Greenland and northern Europe toward the equator. As they move south they slow down and are broken up and carried off in west winds. They move just far enough south to bring rain to the Mediterranean countries, including the Fringe. But in the Sahara to the south the land is arid. However, the mountains in the Sahara receive heavy rains on their tops.

Close ties with Europe. Thus the Sahara separates the Fringe from the rest of Africa. When you look at the map, the Fringe appears to be separated from southern Europe by the Mediterranean Sea. But we should remember that the Mediterranean Sea has been a great highway ever since ancient times. Water can tie peoples together instead of separating them.

The Fringe is a land with close ties to southern Europe. From time to time the southern Europeans have attempted to control territory on the African side of the Mediterranean. Spain, France, and Italy have all built colonies in North Africa, and these have much to do with the mother countries. The people of Europe have use for the products of the farms, pastures, and mines of the Fringe. The Europeans also wish to market their products in North Africa. Because of these close ties and the ease of transportation, the Fringe is much more a part of southern Europe than of Africa.

The Fringe on the Map

The mountains. On the map on page 238 locate the high mountains that cross the northwest corner of Africa between the Atlantic Ocean and the Mediterranean. These are the Atlas Mountains, named after a Greek god who was supposed to hold the world on his shoulders. Notice that the ranges run generally northeast and southwest, almost parallel to one another. The long valleys and plateaus between ranges open onto the sea at either end. Travel through this mountain region usually runs northeast and southwest along these valleys. Nations that have conquered some part of the region have always found it easy to invade the rest of it.

The Atlas Mountains are not so high as the Andes or the Alps, and they do not include the highest peaks in Africa. Those are in the east central part of the continent. However, the highest of the Atlas ranges, in Morocco bordering the desert, are between 10,000 and 13,000 feet above sea level. They are covered with heavy snow in winter. When the hot, dry summer begins, the snow melts and supplies water to the narrow plain along the Atlantic Ocean. The melting snow also provides water for irrigation along narrow ribbons of lowland south of the mountains, in the Sahara.

Notice on the map that along the Mediterranean coast the mountains rise steeply from the water. Here a few of the rivers are large enough to form deltas where they enter the sea. Each of these deltas is densely populated, with cities and crowded farm lands on which Mediterranean crops are raised.

Mountain basins. Locate the area of mountain basins between the ranges of the Atlas. These small basins are shut off from the sea by higher land. In their bottoms rain water, which cannot escape to the sea, has formed shallow lakes. Since the lakes have no outlets and lose water by evaporation only, they are salty. In some of them the water has entirely evaporated, and the basin bottom is covered with a layer of white salt.

The coast line. Along the southern Mediterranean coast are few large harbors because most of the coast line is straight, without bays. Notice that the cities, such as Algiers and Tunis, are located where small peninsulas extend out into the sea. The harbors are east of the peninsulas, and therefore protected from the west wind. This coast line is much like that of Spain, not at all like that of Greece.

The Canary Islands. Find on your globe the Canary Islands off the west coast of Morocco. These rugged volcanic islands are parts of the western end of the Atlas range, which extends westward under the ocean from the mainland. Canary birds are named after these islands, on which they were first found.

Long before the time of Columbus, the Canary Islands had been visited by a few Portuguese sailors who dared to go so far from the mainland. When Columbus set out from Spain on the voyage that brought him to America, he stopped at the Canary Islands. Perhaps he took on supplies of food and water for the long



BURTON HOLMES FROM EWING GALLOWAY

Agriculture in the Tell in northern Tunisia. The level bottom of this basin is one vast wheat field. The machine pulled by oxen is a modern binder, and the men are Arabs.

voyage across the Atlantic. These islands were the last land he saw until he reached the West Indies.

Three regions. Northern Africa has three regions in which the climate, the plant life, and the people's ways of living are quite different. These regions run more or less east and west parallel to the Mediterranean coast. The most northern region, known as the Tell, extends southward from the Atlantic and Mediterranean coasts to the summits of the high Atlas ranges. Here enough rain falls for agriculture and for Mediterranean scrub forest. As in other Mediterranean lands, crops have to be irrigated only in summer, for the winters are rainy. Wheat is grown in winter without irrigation. But summer crops or crops that are grown all year round, such as dates and grapes, must be irrigated.

The second region is a band of steppe between the desert and the coastal mountains. Find this region on the map (page 242). It is too dry for scrub forest

but is covered with short grass. The grass turns brown in summer and changes to green during the short period of winter rains. Then it makes good pasture.

The third region lies to the south of the steppes but reaches the Mediterranean coast in Egypt. It is a desert, land so dry that not even steppe grass can live. The only places where people make their homes in this region are a few oases where there are small streams or springs to supply water.

Conquests of the Fringe. The history of these lands in North Africa tells of nations to the north and east that wanted to conquer the Fringe. Never has a conqueror come from the south to seize it. Why?

In ancient times the city of Carthage stood a few miles from where you see the city of Tunis on the map. Carthage was first built as a colony of a seafaring people from the eastern Mediterranean coast. The colony grew quickly and was the first to take control over the African coast. Carthage was conquered and

destroyed by the Romans, who were interested in the wheat from the African plains and plateaus. The Romans were constantly troubled by the desert nomads who raided the coast. Next, barbarians from northern Europe came across the Strait of Gibraltar and took the Fringe from the Romans. Not long afterwards the Moslems from Arabia swept westward across Africa.

After the Moslems had ruled the Fringe for centuries, European countries, mainly France, became interested in the area. Locate the country of Algeria in North Africa. The French entered Algeria and made it part of the mother country. They then moved both east and west, capturing Tunisia and Morocco, but allowing them more independence than Algeria. Spain occupied a portion of northern Morocco. But because the city of Tangier, opposite Gibraltar, is important to all nations, this city was made an *international* settlement. *Inter* means between or among; *national* refers to nations. So an international settlement is one which is open to all nations. The Italians were among the last to want colonies in Africa and had to take what was left. They founded a colony in Libya, the part of North Africa in which the steppe borders the sea.

The Fringe today. Of the European nations occupying the Fringe, France has the best land. French North Africa is the most productive because it has the widest belt of land receiving enough rainfall for farming. Libya is mostly desert and includes only a few patches of Mediterranean scrub forest. After World War II, Italy gave up its claim to Libya. Spain's part, Spanish Morocco, opposite the Strait of Gibraltar, is a small section crossed by high mountains.

French North Africa is divided into three parts. Locate the country of Morocco in the west, Algeria next to it, and Tunisia on the east. The only part of the Atlas coast that does not fly the French flag is Spanish Morocco.

The greater part of the people in each of the French colonies lives in the Tell. But the greater part of the land in each colony lies in the desert. We shall now see how the people make use of the land in each region.

THE TELL

Today the visitor to the Tell finds a scene much like parts of Italy or Spain. Wheat, barley, peas, tobacco, cotton, and rice are grown on the level lowlands. On the lower slopes of the mountains grow large groves of orange and lemon trees. Higher up on the slopes are vineyards and olive groves. Where water can be obtained for irrigation, summer crops are also raised. Clearing away the scrub evergreen trees and overgrazing in the highlands have led to much soil erosion and made the flow of water in the streams less regular.

Since the coming of the French to North Africa, large tracts of the best land have been turned into great farms, and modern agricultural methods and machinery are used. Alongside these farms lie smaller plots of land belonging to Arabs or Berbers. The Arab and Berber farmers still do their work by hand with crude tools. They cut their wheat with sickles and thresh it by walking donkeys over it.

Grapes in Algeria. Much of the produce of the Tell goes to France, Italy, and other European countries. One crop that has had an interesting history in the Tell, especially in Algeria, is the grape.



JAMES SAWDERS—COMBINE

Pumping irrigation water in North Africa. The pump is driven by a horse that walks around the well. The pipe at the bottom of the picture carries irrigation water to the fields.

In the other Mediterranean countries grapes, you remember, are used in making wine. The Arabs and Berbers do not drink wine because their religion does not permit it. Eating the grape as a fresh fruit uses up only a small part of the crop. Therefore you might think that there is little market for grapes raised in the Tell. This was true for centuries until a great plague wiped out thousands of vineyards in France. Then hundreds of acres of farm land in the Tell were quickly made into vineyards, and the French soon began to buy Algerian wine.

Because of this good market for wine, thousands of French settlers went to North Africa. Later, after the French vineyards were again producing grapes, wines made from Algerian grapes continued to supply about a fifth of all

French wine production. Thus, a disaster in the homeland helped the Tell to build up a paying industry.

Tunisian agriculture. In Tunisia are large farms worked by native tenants—the kind of estates you have seen again and again in the Latin American and Mediterranean countries. The owner furnishes the seed and tools. The harvest is then divided between the owner and the native farmers. Farms worked by tenants in this way are not usually well cultivated and have not been so successful as the productive vineyards of Algeria. Along part of the eastern coast of Tunisia, however, great olive groves furnish an excellent quality of oil.

Morocco farms. Morocco does not have large olive groves and vineyards like those in the colonies to the east.



BURTON HOLMES FROM EWING GALLOWAY

Nomadic shepherds in the Sahara. The sheep graze on clumps of desert shrubs.

Instead, its wide plains supply great quantities of wheat. This, as you would expect, is winter wheat, grown without irrigation. It is planted in the fall and harvested in the spring. In some years the production of wheat in Morocco amounts to one sixth of the entire French crop.

Libyan farms. From the city of Tripoli eastward along the Mediterranean a caravan route passes through a few oases where water is obtained from springs. Here fruits, tobacco, wheat, and barley are grown. But only on the plateau in eastern Libya does enough rain fall to allow farming without irrigation. Palms, olives, and bananas are cultivated on the coast, and wheat and barley are grown on the plateau.

Forest lands. As in other Mediterranean lands, the forests of the Tell have disappeared wherever people have settled in large numbers. After the forest has been cut, it does not grow again unless young trees are planted and cared for. Instead, bushes and scrub plants cover the ground. In the higher mountains, where rain comes often, there are still some dense woodlands. These are chief-

ly Mediterranean scrub forests, but on the highest slopes are pine, cedar, and juniper trees. The cork oak grows wild in the Atlas forests. Its bark is carefully removed by the cork gatherers and sold for export to France, where it is used for making bottle corks. Unless these forests are cared for, they too will soon be cut down and will disappear. Probably the only reason they remain is that they are so hard to reach. Otherwise the great demand for building material and firewood would have caused them to disappear long ago.

THE STEPPES AND THE DESERT

South of the Tell, on the steppes and the desert, live three kinds of people: Arab and Berber shepherds, oasis farmers, and city people. You will read about the city people in the next section. They are mostly Europeans who carry on trade and business or serve in the army or work for the government.

Nomadic shepherds. The shepherds spend part of their time in the high mountains or wherever they can find pasture for their animals. They move about on the steppe part of the time or all the time, depending on the amount of rainfall. Some of these shepherds own oasis farms. These are on the narrow ribbons of irrigated land along small streams that flow southward from the Atlas Mountains into the Sahara. The shepherds do no farm work. They rent their land to oasis farmers and return to the oasis regularly to collect the rent or a part of the harvest. In the spring, as the temperature rises and the weather gets drier, the shepherds drive their flocks into the Atlas Mountains to find good pastures. During the summer they move higher

and higher into the mountains. Then, as winter approaches, they return to a fresh crop of grass in the hilly lands and low basins to the south. Here enough rain falls in winter to permit a fair growth of grass. Some of the rain water collects in small lakes.

The nomadic shepherd obtains most of the necessities of life from his herds. He usually has more sheep than goats, but both are valuable to him. From the sheep he gets mutton, soft hides, and wool to make the long white robe that he wears. His goats, too, provide him with fiber that can be woven into cloth or made into felt for his tents. Goat milk is drunk fresh or is made into butter and cheese. The skin of the goat makes a container for water or other liquids.

Because the shepherd is always on the move, he does not have a permanent house. He carries with him a thick tent, made of felt, to shelter his family from the blazing sun at midday and the cool winds at night.

Oases farmers. The desert, south of the steppes, is inhabited only where irrigation is possible. Small farm villages are located usually in the oases, near a stream or spring. The people live in

very small mud huts with flat-topped roofs of thatch. Outside the village they grow wheat, olives, figs, and particularly dates.

Some of the villages are located on hilltops above the oases for protection from wandering tribes and robbers. The houses are built close together, and a wall of some sort usually surrounds the entire village. Most of these old walls are still standing.

In a hilltop village, water must often be brought a long way on the backs of donkeys. So must firewood, which is very hard to find. Most of this work, as well as the field work, is done by the women.

Dates. The date palm is a very important tree to the people of the Sahara. Wherever there is enough moisture so that its roots can reach water, it will spring up, grow tall, and spread out its great shade-giving leaves. Some date palms reach a hundred feet in height and have been known to live for a hundred years.

The date palm is not native to the Sahara but was brought into the desert from Arabia. It has made the oases much more productive. Because of this

EWING GALLOWAY

In this Algerian oasis scattered date palms grow in an irrigated field used mainly for wheat. A Berber climbs a tree to gather the fruit.

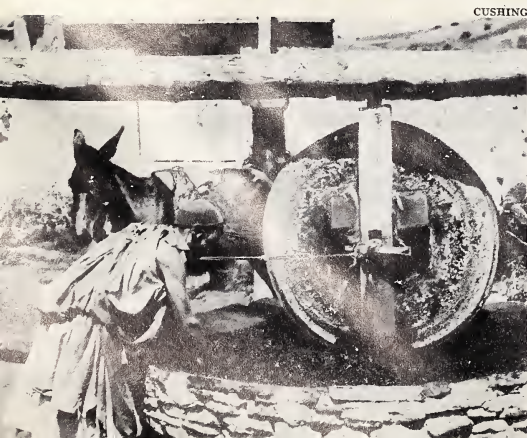


palm, each oasis can supply food for an increasing number of people.

When the fruit is ripe, it is picked by small boys, who climb the trees and gently remove the dates from the great clusters in which they grow. Some of the dates are carefully sorted and boxed for export. The rest of the crop is saved to supply food for the villagers. No part of the date palm is wasted. The villagers grind the seeds into a meal that is either used in making a drink or fed to goats. Sometimes the seeds are pressed for the oil they contain. The long, thin leaves are used to make mats and baskets and sometimes to thatch roofs. The top bud on the tree is often cut off and eaten as a vegetable. The wood of the tree is good for building fences, and the bark contains a fiber that is excellent for making ropes.

Transportation. In the Sahara the best means of transportation for centuries has been the camel. Now that the French have built roads across the mountains and desert, automobiles are used by Europeans and many of the wealthier Arabs and Berbers. But automobiles are still so expensive that few farmers can buy them. Most of the farmers and the

Primitive olive press used by Arabs in Algeria. The stone wheel pulled by the donkey rolls over the platform, crushing the ripe olives and pressing the oil out of them.



CUSHING

herders depend on donkeys and camels as their ancestors did before them.

Primitive ways of living. Outside the large farms in the Tell, the French have not been able to make changes in the primitive methods of farming and grazing used by the Berbers and Arabs. Few of these people can afford the tools and machinery that might make farm work easier for them. Some do not want to give up their independence by living on large farms where they must carry out the orders of the landowner.

North Africa still has many wandering tribes that raid the villages. These raids cause trouble for the farmers and those trying to improve the country. But today many of the people are growing tired of the hard life in the mountains and deserts and are moving to the cities.

Libya. From Tunisia to eastern Libya the Mediterranean Sea forms a great bay. Except for the plateau just east of this bay, the land along the coast is dry and hot. It is dry because it lies too far south to be reached by the masses of cold air coming out of Greenland and northern Europe in winter, which bring moisture to the Tell. (If you have forgotten about these great puffs of air, read page 301 again.) It is hot because the land is low. The high temperature causes the little moisture it does receive to evaporate rapidly.

Italy has tried to make this vast area of land into a prosperous colony as the French have done in Algeria. But the dry climate and the poor soil of Libya have been great disadvantages. Also, the native tribes have been hard to govern, and Italy has had to spend large sums of money to provide police protection for the colonists. Libya has been an expense to the mother country.



BLACK STAR

Primitive threshing in North Africa. Wheat is crushed out of straw by the wooden sled pulled by the camel. The wheat is then tossed into the air and the chaff is blown away.

CITIES AND INDUSTRIES OF NORTH AFRICA

When the Arabs ruled North Africa, they had four capital cities in Morocco. These were Fez, Meknès, Marrakech, and Rabat. All these except Rabat are inland cities located on good caravan routes. After the French came, these four cities became less important for trade. Port cities such as Casablanca, Algiers, and Tunis became the export centers for products of the rich Tell lands behind them.

Most of the old Arab cities are much alike in appearance. To visit one of them is to get a good idea of what the others are like. Let us read about Fez.

Fez. The city of Fez lies on the crossing of two important transportation routes. One route begins at Rabat and follows a narrow, flat-bottomed valley through Fez and around the northern end of the mountains into Algeria. It is

the main east-west route through this part of North Africa. The other route, a north-south one, begins at Tangier and goes over mountain passes to the settlements on the edge of the Sahara, and even across the Sahara. During the days of Arab rule, this was a great caravan route. African slaves and trade goods such as ostrich feathers and ivory were brought northward through Fez on the way to Spain and Portugal.

The narrow valley in which Fez is located is a little more than a thousand feet above sea level. Because it is hemmed in by steep mountainsides, cool breezes cannot reach it, and it is very hot in summer. From Fez steep slopes go down to the valley route leading to Rabat.

Fez is a commercial center. It was founded over eleven hundred years ago after the Moslems had swept across North Africa and conquered everything in their path. Because the city had an



CUSHING

A street in an Arab section of Rabat. Notice the enclosed gardens. The flag on the minaret is raised several times each day when it is time for Moslems to pray.

excellent water supply from the valley, it attracted great numbers of people within its walls. About five hundred years after it was founded, it had a population of around four hundred thousand, more than twice its population today.

Fez is the religious capital of western Africa for the Moslems. The Moslem temples, called *mosques*, are beautifully decorated. For miles one can see their *minarets*, or slender towers, from which the people are called to prayer.

Like all the cities of the Fringe, Fez has two sections: an ancient Moslem section and a new European section. In the Moslem section the streets are very narrow and crooked. Large, whitewashed houses are built out to the edge of the street, with no space between them. They have no front windows but only small doors. On the second floor small porches extend out over the narrow street. These porches sometimes reach to within a few feet of those across the street.

Though the houses are not attractive on the outside, once you enter the door you discover beautiful rooms with tile floors, hand-carved woodwork, expensive rugs, and fine draperies. The rooms surround an open court or garden, where there are flowers, fountains, and small

trees. What is there about this house that reminds you of México?

European residents do not care to live in the crowded old section of the city, and the Moslems do not want them there. Over a mile from the old city the Europeans have built their homes on an area of higher ground, where there are cooling breezes. Here, along wide, shady streets, houses like those of Europe or America stand surrounded by lawns and enclosed with elaborate fences. A railway from Rabat comes to this European section of Fez.

In the market place of a Moslem town the shops sell both native and foreign goods. From the small workshops of Fez come silk cloth, fine leather goods, especially Turkish slippers, and colorful tile for the decoration of floors and walls. From Europe, chiefly France and England, come factory-made goods to Fez markets. These products are received in exchange for exports of handmade native products. Entire streets in the market place are occupied by shops selling only one kind of article. In one street nothing but perfume is sold, in another fine handmade copper and brass dishes and trays, in still another rugs or cloth.

Algiers. The city of Algiers includes a modern French section and an old Arab stronghold. After the discovery of America, this city was the headquarters for the cruelest, most bloodthirsty pirates in history. They gathered their ships in sheltered harbors along the coast, where they were close to shipping routes but could not easily be attacked. They plundered merchant ships on the Mediterranean, stealing or destroying the cargoes and capturing the crew and passengers, to be used as slaves.

For a time the United States, then a young country, paid money to these outlaws to protect its ships. But finally the pirates were defeated by a United States fleet under the command of John Paul Jones, and thereafter ships were allowed to sail in peace. It was then that the French conquered Algeria and made it a part of their homeland.

Today the city of Algiers is a large seaport and the capital of Algeria. Its population is about a third of a million. On a large hill in the city stands the Casbah, a mighty building erected by the Moslems to serve as both a palace and a fort. Clustered around the Casbah are the small, flat-topped houses of the old city with its narrow, winding streets.

Along many streets you will see cafés where men in turbans and long, flowing robes sit at sidewalk tables, sipping tiny cups of coffee. The café is a club, hotel, and home to many Arabs.

In the Arab schools you will see small boys gathered around their teacher studying the holy book of the Moslems, the Koran. It is written in a language different from the one they speak. In some schools the boys learn the words by heart but do not know what they mean.

Girls do not attend these classes, for they are not given a school education. Instead they learn at home to cook and sew. Many are employed in small shops and trained to weave fine rugs.

The city also has a modern section. Built by the French, it has long, broad streets, shady squares, electric street cars, and fine apartment houses.

Algiers has become a large and important city because of the trade it carries on with European countries, particularly through the port of Marseilles in France. But it does not get all of the Mediterranean trade that comes to the Tell, because both east and west of the city are other excellent ports. Each of these handles the foreign trade for its own narrow stretch of farm land.

JAMES SAWDERS—COMBINE

The port of Algiers. Inside the breakwater are two great passenger liners. Notice the buses which transport the passengers to and from the large hotels in the city.



Tripoli. Tripoli is the chief port and capital of Libya. Products from desert oases to the south are brought by caravan to Tripoli. (Find Tripoli on the map on page 239.) They are then exported to countries in Europe. Water to supply the city people is obtained from wells. The Italians use windmills to pump the water to the surface, but the natives still use animal power to draw up water in buckets.

Minerals. The North African Fringe is known to have mineral deposits, but few of them are being developed. Iron is found in the mountains, but because of the lack of good transportation it has been mined only in small quantities. Because the area lacks fuel and hydroelectric power, few factories have been built.

The Fringe has the world's largest supply of *phosphates*. Phosphate is one of the important minerals in commercial fertilizers. Fertilizer is much needed in Europe because the farm lands there have been cultivated for thousands of years and have lost much of their natural fertility. The phosphates of the Fringe are very useful to the people of Europe.

Phosphate rock is found near the salt lakes and basins. Like Chilean nitrate the deposits here lie near the surface and are mined from great open pits. The rock is crushed, washed, and sorted. That containing much phosphate is shipped by railroad to ocean ports for export.

THE MEDITERRANEAN, A SINGLE REGION

Geographic regions are not each on a particular continent. You have now studied most of a region that lies on three continents and encloses a great sea high-

way. The Fringe is part of the Mediterranean region chiefly for three reasons: (1) its climate; (2) its separation from the rest of Africa; (3) its people—its territory has been partly settled and is governed by southern Europeans.

Erosion by wind and water. One of the greatest problems in the entire Mediterranean region is to find ways to make use of the land without allowing it to be destroyed by water and wind erosion. On the slopes where the forests have been cut down or the grass killed by goats, there is no vegetation to soak up and hold the water during the wet season. The water runs off quickly, carrying with it great quantities of topsoil and cutting deep gullies in the hillsides. When the dry season comes, the topsoil left becomes so dry that it is dust. Strong winds carry it away. Water and wind erosion in the Mediterranean countries have destroyed enough good farm land to grow food for millions of people. And more land is being destroyed every year.

Need of preventing erosion. Wrong methods of farming on hillside fields have helped to ruin much good land in these countries. Steep slopes can be farmed with hoes or primitive tools without causing a large amount of erosion. Such tools do not turn over all the soil, but leave part of the grass and small plants. The plow, however, turns over all the soil, leaving no grass and small plants to hold the soil in place. Too often the farmers have plowed up and down the hillsides rather than across the slope of the land. They have destroyed much more land than they did with primitive tools. When plows are used, erosion must be prevented by building terraces across the slope. Then the terraces and the ridges between the furrows keep the



JAMES SAWDERS—COMBINE

In the Mediterranean almost every bit of land that can be cultivated is already in use. This picture, taken in Italy, shows how even the very steep hillsides are used for farming.

rain on the slope until it can soak into the ground.

Too many people for the good farm lands. The Mediterranean countries have the advantage of much sunshine in summer, which makes crops grow fast, and mild winters, which allow crops to be grown the year around. But these countries have the disadvantage of including large areas too dry for use in summer without irrigation. Over thousands of years the inhabitants have made farms wherever water could be had for irrigation. Even with modern methods and

machines, little more irrigating can be done because most of the water is already being used.

Today the population of the region is much larger than it has ever been before. Many more people have to depend on the farm land for their living. The land cannot produce enough for all of them, and therefore they are always close to famine. Furthermore, the population is steadily increasing. As a result of this increase together with the loss of good farm land by erosion, living conditions in the Mediterranean countries are poor.

Causes and Connections

Give three reasons why the North African Fringe is more closely linked to southern Europe than to the rest of Africa.

What natural advantages do the Mediterranean countries have for helping their people to obtain a living? What disadvantages have these countries? Do you think the advantages make up for the disadvantages?

CAUSE AND EFFECT

When certain things or events help to bring about other things or events, we call the first thing the cause and the second, the *effect*. How did each of these causes bring about each of these effects?

Causes

There is a failure of the grape crop in France.

The Arab acquires the camel.

Forests are cut down.

Terraces are built across hillsides.

The population increases in a country.

Effects

The wine industry is built up in Algeria.

The Arab travels over long distances.

Erosion takes place.

Erosion is prevented.

Living conditions become poorer.

SPECIAL REPORTS

Choose two of these topics and write a report on them.

- The chief difference between modern French farms and Arab farms.
- How the nomadic shepherd lives.
- The life of an oasis farmer.
- An old Arab city.

- The interior of a Moslem home.
- A Moslem market.

WHAT IS THE CONNECTION?

A list of products from any region should give you an idea of the climate of that region. Match these groups of products with the kind of climate in which they can be grown.

Products

Climate

dates, figs, citrus fruits, winter wheat	mild, tropical climate (rainy)
corn, rice, tobacco, cotton, vegetables	cold winters and short, cool summers
sugar cane, coffee, cacao, bananas	Mediterranean climate
spring wheat, barley, potatoes	mild winters and rain in all seasons

WHY WOULD YOU SAY:

- That the Tell resembles Italy or Spain?
- That the habits of the Berbers differ from those of the Arabs?
- That the forests of the Mediterranean may soon disappear unless something is done by the people to conserve them?
- That the date palm helps to make the oasis more productive?
- That the Fringe is separated from the rest of Africa?

MAKE A CHART

Name the three regions of North Africa. Tell where each is located, what its climate is like, what its plant life is like, and how the people make a living.



SUPPLYING REASONS

1. Why does travel through the north-west corner of Africa usually run north-east and southwest?
2. Why are the deltas of North Africa densely populated?
3. Why are the lakes of the Atlas basins salty?
4. Why do the Arabs and the Berbers continue to use primitive methods of farming and grazing?
5. Why did Italy meet with difficulty in attempting to make Libya as prosperous as Algeria?
6. Why have few of the mineral deposits of the Fringe been mined?

THE FRINGE ON THE MAP

1. Find the three regions on this map. Now notice the thin strips of oasis extending southward into the desert. What people live in the oases? What crops do they raise?
2. Describe the people who inhabit the steppes. Where would you find most of them in July? Where would you find most of them in January?
3. Point to the region on the map where you would find large commercial farms worked with machines.
4. Copy the outlines of this map on

your paper, showing by pencil boundaries the mountains and the three regions, and coloring them as follows: mountains, red; farm lands and oases, green; steppes, yellow; and deserts, brown.

5. On your map print each of the following where large quantities of it are grown: wheat, grapes, olives, citrus fruits, dates. (See the maps on pages 249, 250, 252, and 253.) You will want to get some of your information from reading again some parts of this chapter.

6. Where sheep and goats are raised, print their names.

7. Locate any minerals you know about.

8. Write two paragraphs telling about the foreign and domestic trade of the Fringe, including means of transportation and products traded.

TELLING THE DIFFERENCE

Explain the differences between:

- a. a steppe and a desert
- b. international and national
- c. phosphate and nitrate
- d. nomads and shepherds
- e. minarets and mosques
- f. mountain and plateau
- g. agricultural region and industrial region.



On the left is a Greek fishing ship, one of the first boats used by early explorers. On the right is a Viking ship used centuries later to explore the coast of North America.

The Earth and Man's Use of It

Before the time of Columbus. Two thousand years ago the most civilized part of the western world was around the shores of the Mediterranean Sea. No one living near this sea had ever heard of South America or North America. Men believed that the earth was round, and they thought they knew how large it was. They knew that the earth turns around every twenty-four hours and that the sun does not really move around the earth as it seems to. But as time went on, these facts were forgotten by most people and had to be learned again.

Two thousand years ago the largest ships that men had were very small.

At first, most sailors did not dare to go out of sight of land. Then gradually they learned to steer by the sun on clear days. On clear nights they could steer by the stars, for the North Star, which can be found by following two stars in the Great Dipper, is always in the north. The compass had not yet been invented. In cloudy weather, sailors would be lost night and day unless they could see land.

Nevertheless, daring sailors went all along the coasts of the Mediterranean and the Black Seas. Some of them even went out through the Strait of Gibraltar and along the coast of western Europe to the British Isles in search of tin. It is even



Early and modern explorers. On the left Pizarro's company moves through a forest in Ecuador. On the right are some Arctic explorers of today. Notice difference in equipment.

thought that one fleet of ships in those ancient times sailed around Africa.

Hundreds of years passed. Sailors of southern Europe became better and better acquainted with the coast of Europe, Africa, and southern Asia. But they did not know of America until after the famous voyages of Columbus.

From Columbus to the Spanish Conquest. Columbus wanted very much to find a way to India by water because it would be much cheaper to carry goods all the way by ship. There was no Suez Canal then; men could not sail through the Mediterranean and the Red Seas to India. But Columbus believed that the earth was round. He believed that if a man traveled far enough in the same direction, he would at last come back to the place from which he started.

Columbus sailed all the way across the Atlantic and back again, not just once but four times. He believed that he had discovered a new way to reach India, and he gave the name, Indians, to the people of the new land. Then an all-water route around the southern tip of Africa

and northward and eastward through the Indian Ocean was discovered. Not long after Columbus's voyages, Magellan's ship sailed safely all around the world and back to the Spanish port from which it had started. That voyage first proved that the earth is round.

Then other travelers visited the two Americas, for as soon as they were known to be continents, men wanted to explore the interiors. Early in this book you learned how Spanish explorers landed on the shores of the Gulf of Mexico and the Caribbean Sea and worked their way into South America. Within a century they had discovered large deposits of precious metals and had begun to do some mining.

The Portuguese also came to the shores of Latin America and they explored along the coast of northeastern Brazil. They were the first to lay out great plantations in the New World. On the plantations they raised a single big commercial crop for sale in their homeland, using Negro slaves from Africa as laborers. What did they raise?

SHOWING THE EARTH ON MAPS

Thus it took many discoverers and explorers to learn about the world in which we live. They suffered great hardships and many lost their lives in gathering the facts that make it possible to draw correct maps of the world. If you had gone to school even a hundred years ago, you could not have used maps of South America like those in this book. A few men had explored the coast, but almost everything else about the continent was unknown. No one knew the sources of the great rivers or what kind of people lived on their banks. No one knew where in the interior were forests, grasslands, or deserts, or what kinds of animals were to be found there. Today, however, you can learn in a short time many things that it has taken explorers and scientists thousands of years to find out.

Early maps. People made maps, you know, even before they learned how to write. Early savages drew diagrams on the ground with a stick. Today in a British museum there is a clay map that is more than four thousand years old. Men put on their maps the world as they knew it at the time. After sailors had reached a new island or continent, news of the wonderful journey led explorers and map-makers to visit the new land. As methods of measuring latitude and longitude improved, map-drawing became much more accurate.

The only true map. Since our earth is a sphere slightly-flattened at the poles, a globe shows its shape almost exactly. But maps are flat, and you cannot spread the surface of the earth out flat, for it would wrinkle. The curved surface of the earth is stretched out of shape when

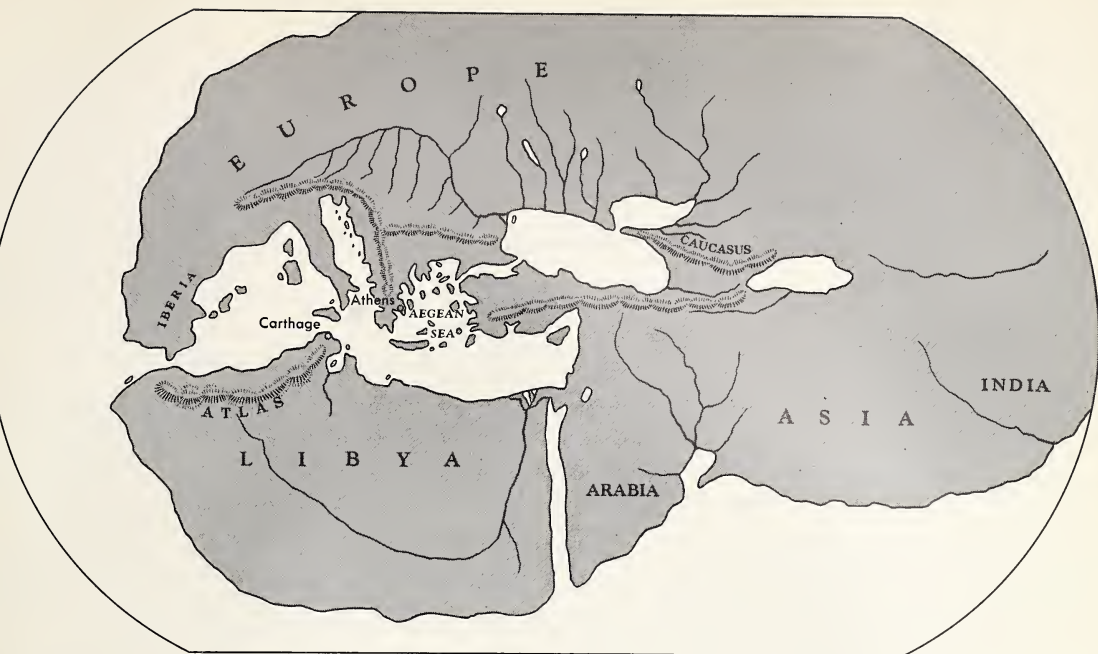
we represent it on a flat map. Therefore, if you want to see the true shape of any large area, you should look at a globe.

What any map shows. Any map shows distance and direction. On a globe or a map you can measure the distance between two points. Then, using the scale of miles, you can find how many miles apart the two points are. Remember also that maps are drawn to different scales. The scale of one map may be many times as large as that of another map.

On maps and globes you can also find the direction in which one place is from another. North, of course, is always toward the north pole, and south is toward the south pole; any north-south line, showing longitude, passes through points exactly north or south of one another. Similarly, the east-west lines, or parallels of latitude, pass through points that are directly to the east or west of one another.

Because maps show distance and direction, they can be used to show the size and shape of bodies of land and of water. By looking at a map you can see, for example, that the Iberian Peninsula is almost square and that Italy is a long, narrow land. You can see that the Mediterranean is much longer east and west than north and south. It is not nearly so large as the Atlantic Ocean but is larger than the Black Sea.

Reading maps. Different kinds of maps can be made of the same area. Each map is useful for certain purposes only. The map on page 61 is made to show rainfall, that on page 11 to show population, and that on pages 56-57 to show the surface, the countries, the railroad lines, and other facts about South America.



AFTER THE TIMES ATLAS

This map, made two thousand years ago, shows what men knew then about the earth.

All the facts shown on maps can be divided into two kinds: natural facts and man-made facts. Examples of the natural things shown are mountains, rivers, lakes, coast lines, and vegetation. Examples of the man-made things are railroad lines, steamship lines, cities, highways, dams, and boundaries between states or countries. The natural regions on maps often extend across man-made boundaries. For instance, the Chaco, a great lowland region, is shared by four South American countries.

THE EARTH AND THE SUN

While explorers have been learning about the surface of the earth, *astronomers*, or persons who study the stars, have been using telescopes to learn how the

earth moves in space. They have discovered that the earth has two kinds of motion. It is *rotating*, or turning, on its axis, a motion that causes day and night. At the same time it is *revolving*, or moving around the sun, in a path that is almost a circle. This movement causes our four seasons.

Day and night. The earth rotates from west to east on its axis. At any time half its surface is turned toward the sun, and the other half is turned away from the sun. Wherever we live, as the earth turns us toward the sun, the sun appears to rise in the sky. As we turn away from the sun, the sun appears to set in the west. A complete *rotation* takes twenty-four hours.

The earth's axis does not stand straight up on the path it follows. Rather it is tilted toward the North Star.

Seasonal changes. The white dot in the center of this diagram stands for the sun. The dotted line around the sun stands for the path on which the earth makes its *revolutions*. This path is called the earth's *orbit*. If you were looking right down on the orbit, you could see that it is almost a circle. It is nearly 600,000,000 miles long. The earth travels fast on its orbit, at a speed of nearly nineteen miles per second. Yet it takes 365 days and about six hours for the earth to make a complete revolution.

Imagine that you are far away from both the earth and the sun, so far that the sun appears to you only as large as the white dot in the diagram. Then you could not even see the earth because it is very small compared with the sun.

Now imagine that it is December 22, and you have with you a very large telescope. You look through your telescope at the place on the orbit marked December 22, and you see the earth as it appears in the picture marked December 22. It is half in darkness and half in sunlight, with the direct rays of the sun falling on the Tropic of Capricorn. In the north, sunlight reaches only to the Arctic Circle; within this circle there is darkness twenty-four hours a day. What season is beginning in the northern hemisphere?

Notice that on December 22 more than half of the Tropic of Cancer is in darkness. For this reason the nights on the Tropic of Cancer are longer than the days. In fact, this is true of all places north of the equator. But south of it the days are longer than the nights.

Now find the picture of the earth as it would appear through your telescope on March 21. The earth has moved a fourth of the way along its orbit, and its axis is still tilted toward the North

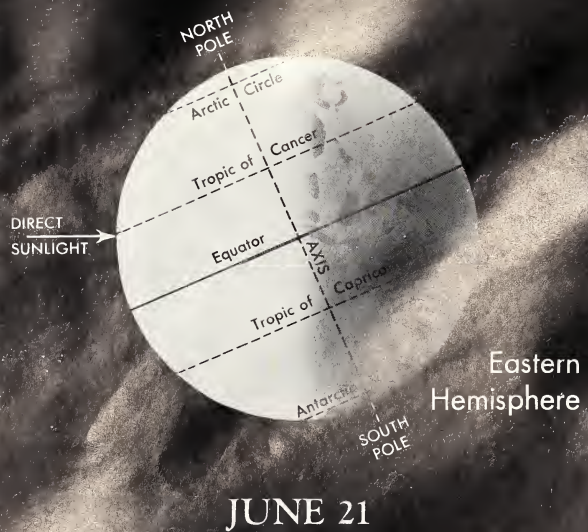
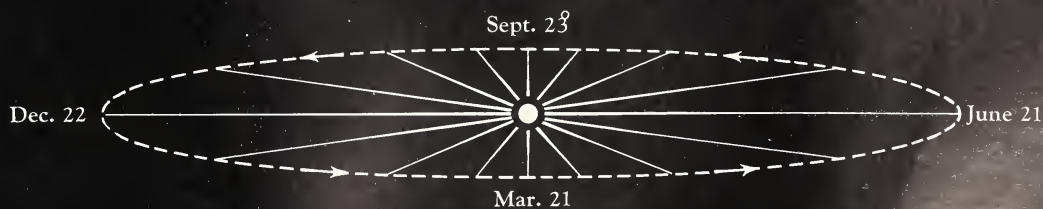
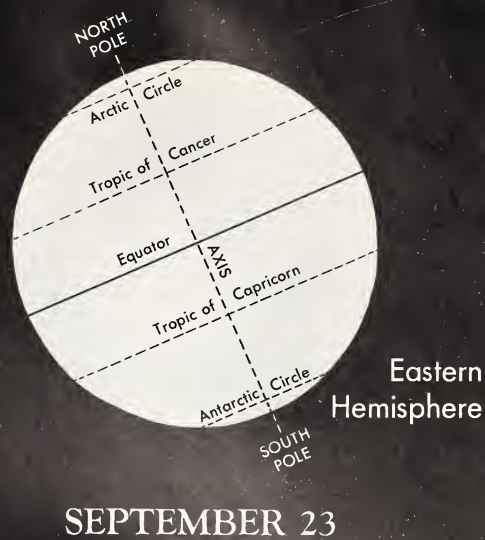
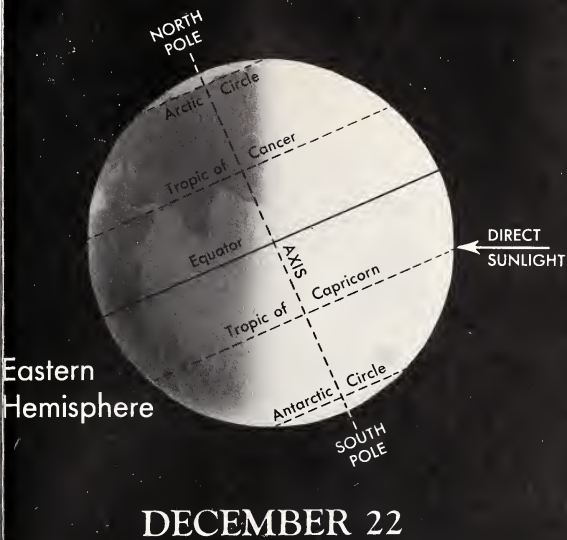
Star. The earth is between you and the sun, and the hemisphere that you can see is in darkness. But you see the brightness of the sun shining through the layer of air surrounding the earth. The direct rays of the sun are falling on the equator, and sunlight reaches to each pole. Spring is beginning in the northern hemisphere. Notice that half the Tropic of Cancer is in darkness. Everywhere on the earth days and nights are of equal length.

Between March 21 and June 21 the earth has traveled another fourth of its orbit. Now the northern end of the axis leans toward the sun, and direct sunlight falls on the Tropic of Cancer. The part of the earth within the Arctic Circle receives sunlight twenty-four hours a day, but within the Antarctic Circle there is no sunlight at all. What season is beginning in the northern hemisphere? Here day is longer than night. On June 21 the day in the northern hemisphere is longer than on any other date. What do we call the two times in the year when the difference between the length of day and night is greatest?

The fourth small picture shows the September equinox. Again direct sunlight falls on the equator, and days and nights everywhere on the earth are of equal length. What season is beginning in the southern hemisphere?

Within the tropics. At the equator the length of day is always the same as the length of night, even at the two solstices. The difference is not great even at the Tropic of Cancer and the Tropic of Capricorn. We should think of the tropics as having days of nearly equal length.

Between the tropics and the polar circles. On June 21, as one leaves the Tropic of Cancer and goes toward the





BURTON HOLMES FROM EWING GALLOWAY

This government farm is in Fairbanks, Alaska, not far south of the Arctic Circle.

north pole, the days get longer and longer, until north of the Arctic Circle the sun does not set at all. So each day the sun has a long time to warm the earth. On June 21, when the sun is directly overhead at the Tropic of Cancer, our Great Plains as far north as Montana receive slanting rays of the sun, but they slant no more than those falling upon the equator on that date. However, in Montana on June 21 the sun shines more than three and one-half hours longer than at the equator because of the tilt of the earth's axis.

Within the polar circles. Even in the polar regions, which never receive sunlight except in very slanting rays, the long hours of sunlight often bring high summer temperatures. In Canada north of the Arctic Circle the temperature in summer sometimes reaches 90° .

CLIMATE AND VEGETATION

On page 8 you learned that location north or south of the equator is measured in degrees of latitude. The low latitudes are those within about 30° on either side of the equator. The high latitudes are those within about 30° of either the north or south pole. The middle latitudes lie between these extremes.

Climate. One fact about climate is that climates in all the continents except Antarctica are similar at similar locations. This means that places in the same latitude and in similar parts of the continents have about the same climate. An area on the east coast of a continent has a climate similar to an area in the same latitude on the east coast of another continent. This is true also of the west coasts and of the interiors of the continents.

Here is an example of how the rule works. Both the Amazon Basin in South America and the Congo Basin in Africa are in large continents and near the equator. In this book you have read that a tropical rain forest, made up of many different kinds of strange trees, covers the Amazon Basin. You have read also that the temperatures are high, but seldom very high and never very low. There is really no summer and winter as we know them. The year is divided into a rainy season and a dry season, which is only less rainy. If you should visit the upper Congo Basin in Africa, you would find a climate much like that of the Amazon. Because the Congo forest is at a higher elevation, however, it is not so dense as the Amazon forest.

The winds also follow this same rule. In the middle latitudes they generally

come from the west; in the low latitudes, from the east except for the monsoons. A monsoon is a wind that changes with the seasons. For example, India, in the low latitudes, has winds that blow onshore during one season and offshore during another. The west coast of the United States has a mild climate, with winds off the ocean. What part of Europe has a similar climate?

Perhaps you know also that the climate of southeastern United States is similar to that of southeastern Asia.

If there were no mountains on the earth, the patterns of climate for the continents would be very much alike. You have seen that altitude, latitude, and land and water make great differences. We know this to be true because men have kept records of the temperatures of many places over hundreds of years. They have found the average temperatures for given places, just as you might find the average of your school marks. Our government publishes tables of average temperatures at weather stations all over the United States. The average temperatures for different areas in the same latitude are not always similar. Can you explain why?

We can tell what the climate of any part of the world is likely to be if we remember these five important points: (1) As the latitude increases, temperatures generally become lower. (2) As the altitude increases, temperatures become lower. (3) As we move farther from the ocean, we find greater changes in temperature with the seasons. (4) Rainfall is greatest where the land borders a warm part of the ocean. (5) Rainfall is least where the land borders a cold ocean current or is distant from the ocean.

Importance of rainfall. Always re-

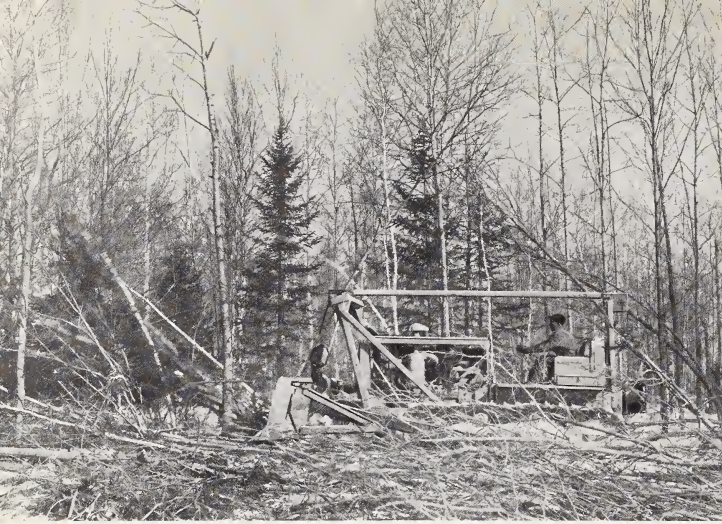
member that the amount of rainfall in different regions is the chief cause of differences in vegetation. In the lower middle latitudes and the low latitudes, regions having less than ten inches of rainfall are deserts. Why? In warm weather, land dries quickly after rains, and ten inches of rain in a year is not enough to keep even grass growing. In the higher middle latitudes and the high latitudes the land does not dry so quickly after a rain. In some far southern and far northern lands such as Alaska, ten inches of rain may be plenty for farming.

In the middle latitudes, most crops do well with a little more than twenty inches of moisture, if most of it falls in the growing season. (Ten inches of snow melt down to equal one inch of rain.) This is plenty for cool regions where the land dries slowly. But in hot regions, where the land dries fast, twenty inches is not enough for farming or even for a good growth of grass.

A weatherman reads his instruments. They must be protected from the sun and rain.

EWING GALLOWAY





EWING GALLOWAY

A tractor clearing scrub timber and pine stumps from a farm in Wisconsin. The farmer will soon have more land for crops and pasture.

Trees will grow well on level, hilly, and steep mountain lands, and even where the soil is not fertile. But they will not grow in dry lands.

All plant life, then, depends on climate, especially on rainfall. Regions of light rainfall or steady cold are but thinly covered with vegetation. Regions of heavy rainfall are forest-covered. The forests in hot climates are denser than those of cooler regions. And even the change of seasons causes changes in the appearance of plants.

Amount of forest land. You know that the four chief kinds of natural vegetation are forests, grasslands, deserts, and tundras. Ages ago forests covered probably a fourth of the land of our earth. However, many forests have been cut down so that men could grow food crops, and today forests cover less than a sixth of the area of the earth. Italy and Greece are examples of countries that have few forests left. Yet standing timber is one of man's greatest resources.

The areas that have been cleared of the forests are still shown on vegetation maps as forest lands. This is because geographers can tell from the natural

vegetation of a region much about how the land can best be used. Many of these cut-over areas are being used as farm land.

Tropical forests. There are four main kinds of forests. One is the tropical forest. It may be an evergreen rain forest such as we find in the Amazon Basin where there is rain every month of the year. Where there is less rainfall or where there is a dry season, the tropical forest is not so dense and is only partly evergreen. Here sunlight reaches the ground, and bushes and other plants grow thickly between the trees. Vines climb up on the tree trunks. When the dry season comes, many of the trees lose their leaves. The forest then changes to a brownish or grayish color. But in the rainy season it turns dark green again.

Many forested regions in the tropics have only enough rainfall for scrub trees. These small, low trees are spaced too far apart to shade the ground, and grass grows between them. During the rainy season the trees are covered with leaves and bright-colored flowers. During the dry season the leaves fall to the ground, leaving the branches bare. The scrub

forest has fewer different kinds of trees than the rain forest.

In all tropical forests are many insects, such as ants and mosquitoes, and many wild animals. These are different on the different continents. As you have seen, the tropical forests of South America have few large ground animals. Most of the animals, such as birds, monkeys, and snakes, live in the dense foliage far above the ground. But African forests are famous for their ground animals. Though most of these animals belong to the grasslands, they also wander in and out of the forests.

The map on the next two pages shows where the four kinds of forests are found. What shading is used for tropical forests? They are found only in the tropics. The largest tropical forest in the world is in the Amazon river basin and parts of the Guianas. Notice also that tropical forests are found all through the West Indies. They also grow on the eastern lowlands of Central America and México. Where in the eastern hemisphere do you see tropical forests?

The Mediterranean scrub forests. In the last few chapters of this book you have been reading about the Mediter-

anean lands with their mild climate, winter rains, and summer drouths. Most of these lands lie hemmed in between high mountains and the sea. Here we find a forest different from the forests that grow anywhere else in the world: a broadleaf, evergreen, scrub forest. Everywhere the Mediterranean forests look much alike even though they are made up of different kinds of trees. This is because of the special kind of climate in which they grow.

The trees are well suited to the dry summer. We have learned that they grow far apart and thus have a large area of ground from which to draw moisture. The ground in a Mediterranean climate may be covered with low bushes and shrubs as well as with scrub forest.

Forests like these are called Mediterranean forests wherever they are found. Study the map on page 326 and notice the parts of the world where these forests grow. Between what latitudes do you find them? In what parts of the continents?

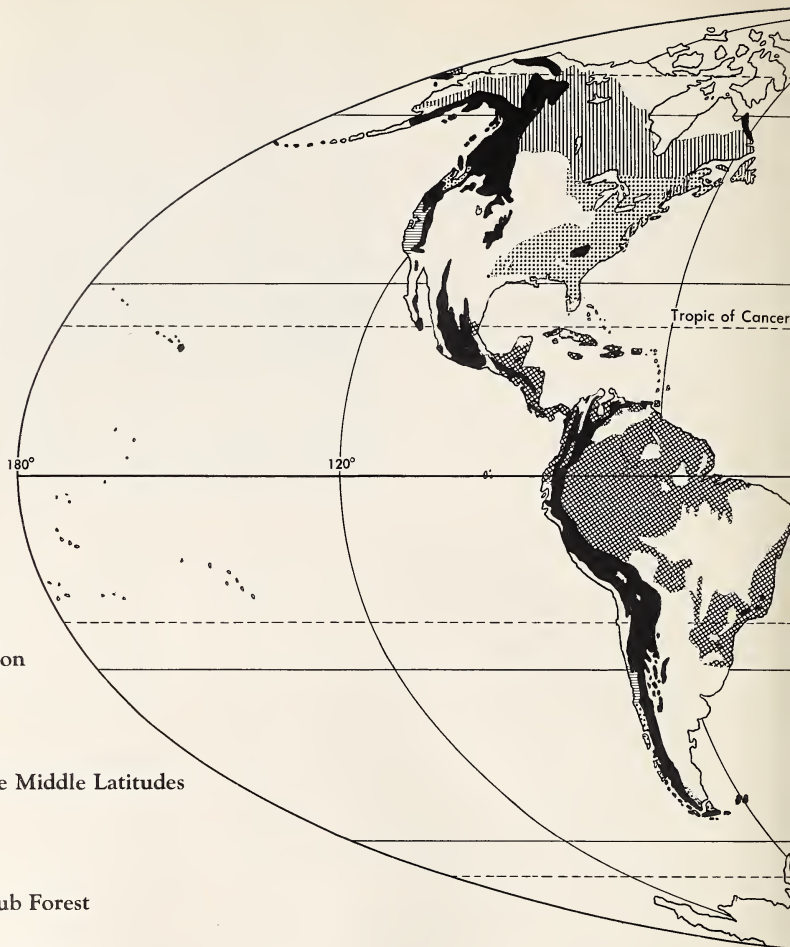
The mixed forests of the middle latitudes. Mixed forests grow in the middle latitudes. They are made up mostly of






EWING GALLOWAY

Mediterranean scrub forest.
An olive grove on an island
off the west coast of Greece.
The old trees have grown
into strange, twisted shapes.



WORLD FORESTS



-  Mountain Vegetation
-  Tropical Forest
-  Mixed Forest of the Middle Latitudes
-  Northern Forest
-  Mediterranean Scrub Forest

broadleaf trees that drop their leaves, but they include also large numbers of conifers. These forests grow in lands having plenty of rainfall and a cold winter.

Our own forest just north of the Gulf of México is a mixed forest. It includes some conifers, but it has even more broadleaf deciduous trees.

On the map find these mixed forests of the middle latitudes. Notice the parts of the continents in which they grow, in both the northern and southern hemispheres. Do these forests grow on

both the east and the west sides of the continents?

The northern forests. In the higher middle latitudes temperatures change greatly from season to season. During the winter the weather is very cold, and there are long hours of darkness. The land is covered with snow, and the rivers are frozen over. But in April or May the ice breaks up and plants grow again.

In the higher middle latitudes of the northern hemisphere are great stretches of land that are distant from the sea.



This is why the temperature changes in the north are so great. Notice on the map that no great stretches of land lie in the higher middle latitudes of the southern hemisphere. Because no land area is far distant from the ocean, the winter weather is mild.

In the north two great forests made up chiefly of conifers, especially spruce, fir, larch, and pine, stretch from west to east across the continents. Find these forests on the map. The smaller one reaches all the way across Canada. The other,

more than twice as large as the Canadian forest, extends from the Atlantic eastward all the way across northern Eurasia to the Pacific Ocean.

The northern forests are not nearly so dense as the tropical forests. Some parts of the northern forests are very valuable for timber, but the greater part of them has poor, stunted, and knotted trees. At the northern edges of the forests some of the trees have been growing for centuries but have reached only the height of a small bush.



ARABIAN AMERICAN OIL CO. FROM CUSHING

A desert oasis. Notice the tiny vegetable gardens, irrigated with water from the spring. People can remain here only as long as the water flows from the spring.

HOW MEN USE THE LAND AND WATER

Ever since you began to study geography, you have been learning that we depend for food, clothing, and shelter on the natural resources of the earth. Primitive peoples, such as the Indians of the high Andes Mountains or the native tribes of the Amazon Basin, depend almost entirely on the resources of the small area in which they live. But people who live in complex ways, such as the inhabitants of most of the cities of the world, depend on the resources of the whole earth.

The way people use the land depends on both the land and the people. The occupations of people in any region depend partly on the resources of the region. Naturally, a hunter will not search for polar bears along the Amazon or in the Andes. A farmer will not try to grow crops in a desert unless he can get water for irrigation. A coal miner cannot work at his occupation where there are no deposits of coal. If you are to understand why men living in a certain area get their living as they do, you must learn about the natural things of

that region—the surface, climate, vegetation, and resources.

But to understand the occupations of the people, you must also know what kind of people they are. Some people know how to make a living in only a few ways, perhaps by farming or fishing. They cannot make their living in a region not suited to their purposes. Let us take an example.

The native Indians in Colombia, who raised corn and potatoes, could not use the high grasslands of the Andes. There the climate is too cold even for growing potatoes. The Spaniards, however, brought sheep and cattle into the Andes. These could graze the year around on the high grasslands all the way up to the snow line. Thus Europeans were able to make a living where the Indians had not been able to do so.

Some people make a much better living than others. Some people make a bare living from the land, while others raise more crops or animals than they themselves need. You know that cattlemen on the Argentine Pampa used to wander about with their herds of cattle,

horses, and mules. Roads to markets were long and very poor, and the cattlemen could therefore sell few of their products. Today, however, the Pampa is one of the most productive grain-growing and cattle-raising regions in the world. The reasons for this great change are, as you know: the invention of the steam engine, the railroad, farm machinery, well-drilling machinery, and cheap windmills; the development of good ocean transportation, by which Argentine products could be marketed in Europe where there is need for food; the raising of high-grade beef cattle to produce good meat for sale in Europe; immigration into Argentina and the growth of large city markets there. Today the surplus products of the farms are marketed in Argentine cities or shipped to foreign markets.

The way people use the land depends on the skills they have learned.

As we have seen, a particular region may be productive for one people but not for another. This happens because some people have skills that other people do not have. Remember that the two chief groups of people who have occupied the great desert of Chile have done so in quite different ways. The Indians had to stay

near the sources of water. The Europeans, however, discovered nitrate in the desert east of the coastal range. Since their settlements, too, depend on water, they piped water for hundreds of miles from the mountains. They built railroads from the port cities to the mining areas and brought in workers for the mines. The desert, which was a barrier between the Indian villages, was not a barrier to the Europeans. Yet the European settlements can last only as long as nitrate brings a good price. When it falls in value, the people in the nitrate settlements will no longer be able to make a living there. They will have to seek a living elsewhere. But the Indians will continue to live in the oases. Which people have learned to live in the Atacama?

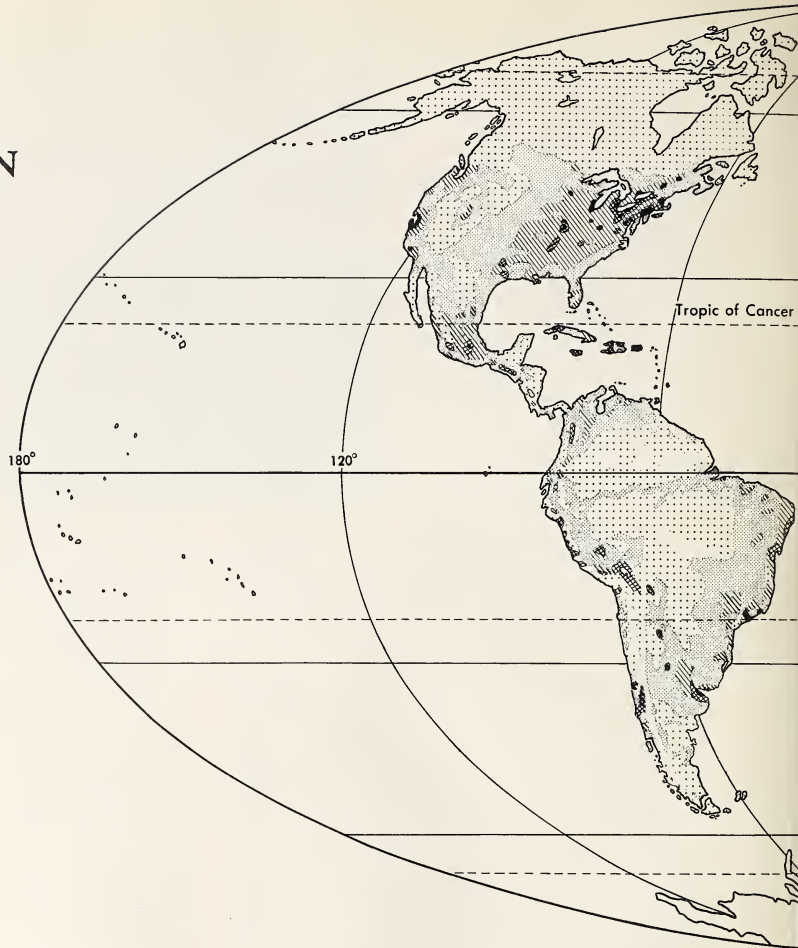
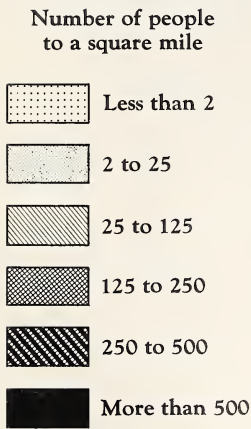
When settlers go to a new land, they try to use the same skills that they used in their old home. The settlers from Italy planted vineyards in Mendoza as they had done in their homeland. They cared for the vineyards well and used the grapes to make wine. The oil industry in the Maracaibo region was developed by British and North American oil men who knew how to drill wells to get oil

CIAA FROM EWING GALLOWAY

In the Chilean desert modern machines are used in nitrate fields. This work will go on only as long as the nitrate lasts and can be sold for more than it costs.



WORLD POPULATION



and how to use it after they had obtained it.

New skills may increase or decrease the amount of land that can be used. When people first settled our Great Plains, they could make only a poor living from farming. The rainfall was too light for corn or for large yields of wheat. After tractors, gang plows, and combines had been invented, each man could farm many more acres of land. He could gain a living from land that was formerly useless to him. Thus the use of

farm machines increased the amount of land used for farming.

Many hilly lands used to be cultivated with hoes and digging sticks. After people in these areas had begun to use farm machinery, they no longer planted crops on the hillsides. Farm machinery cannot be used on very steep slopes. Also, if steep slopes are plowed, the rains wash the soil off the slopes into the valleys. Thus when people farm with machines, they can often use less land than people who use primitive tools.



Some parts of the earth are crowded with people and other parts have no people. On this population map you can see that most of the people of the earth live crowded together in a few regions, leaving vast, sparsely-settled areas in between. Deserts are almost without population except in the oases. But some great cities are so crowded that they lack enough space on the ground for homes and offices, and the inhabitants must build skyscrapers.

If you compare this map with the maps

on pages 326–327, you will notice over half of the people in the world live in forest areas of Asia. About a fifth live in Europe. The western hemisphere generally has thin population.

Why are some lands much more crowded than others? To answer this question we must study each region separately. We cannot say that dense populations are always found in regions having many natural resources. You have seen that the Amazon region has excellent forest resources—hundreds of different kinds of

trees including rubber trees and hardwoods and softwoods. But because men have not been able to obtain and market the forest products cheaply, this vast region is thinly settled. In northeastern United States, New England, a region poor in natural resources, is densely settled. And New Englanders make a good living. Do you remember how?

We cannot say that thin population is always found in deserts, cold lands, and high mountains. You have learned that a mining town such as Potosí can grow up in the cold highlands almost overnight if valuable deposits of minerals are found there. You also know that parts of the Peruvian desert are densely populated.

Where people choose to settle on the earth depends much on their way of getting a living. If people obtain their living directly from the earth around them, they can live only in areas having the resources on which they depend. Primitive hunters can live only where there are animals to hunt, and primitive fishermen only where there are fish in the streams or waters near by. But people who make use of modern machines are able to live in various regions because they can obtain the necessities of life by trade. By using their machines and many skills, they find new resources and thus make idle land productive.

It should be remembered, however, that these people, as well as primitive people, get their living from the earth. A mining town that depends only on a mineral deposit will last only as long as the deposit lasts. A manufacturing town will be prosperous only as long as its people can buy raw materials and sell their manufactured products. The people of the mining town should try to mine their mineral deposit without waste, and

make it last as long as possible. Likewise, the people in a cotton-mill town, although they may never have seen a cotton field, should be interested in having the good land in the cotton regions protected from erosion. For the same reason, city people should be interested in the conservation of all the resources from which they obtain their food, clothing, and shelter.

Land is good or poor according to how man has learned to use it. But industrial people must use their many skills to develop, not to destroy, the resources on which their industries depend.

People have divided the land surface of the earth into countries. The whole world, always the land and sometimes even the water, is divided according to the people who own it. There are countries, states, provinces, territories, and colonies, all with man-made boundaries around them.

The whole area within a country may be productive, or as much of the area as man knows how to make productive. If the people use all their land well and trade some of their products for materials which they cannot produce, they may have a good living. But if they use only part of their land and allow other good land to stand idle, then they may not have a good living. You have seen that this is true in many countries of Latin America where great stretches of land have almost no inhabitants. Of course, some of this land is not useful to man. But much idle land could be made useful by irrigation, by building railroads or highways, or by other methods.

In some countries, such as Italy, all the good land is used, but even then there is not enough food for the people. They have a bare living because the country is

too crowded. If, however, they can import enough raw materials and make useful articles in factories, they can pay for their imports by exporting manufactured products. Then they may be able to make a better living. The large population of such a country provides plenty of labor for factories and a large market for factory goods.

Man changes the land. As man uses the land to make his living, he makes changes in it. He may use up the fish in the streams. He may destroy forest and mineral resources. He may bring new plants and animals to the land. He may irrigate the desert and make it produce crops. And you know of many other changes that man makes in the land because of his way of living. You

know, too, that some of these changes are good and others are harmful.

A country should conserve its resources. A nation uses its resources best when it learns to look far ahead. It plants new forests. It uses its minerals without wasting them in mines or factories or homes. It plans for wise use of land that is now lying idle and keeps its soil from being washed away by the rain and blown away by the wind.

Today, however, too little conservation work is being done here and in other countries. Every year thousands of acres of productive land are being changed into wasteland by bad methods of farming, mining, and lumbering. How many ways can you think of to stop this terrible waste. How can you help?

Conservation in Illinois. Tractors are filling a gully and cutting a new drainage ditch.

EWING GALLOWAY



Thinking About Our Earth

Choose examples to show you understand that the way land is used depends on both the land and the people. (Clues: Are all the ways of making a living possible in every region? Do different peoples use the same land in the same ways?)

SOME QUESTIONS ON ASTRONOMY

1. Imagine that it is now December 22, and answer these questions:

- Where do the sun's rays fall directly?
- Where, if anywhere, is it dark twenty-four hours a day?
- Which season is beginning in the northern hemisphere? In the southern hemisphere?
- Where, if anywhere, are the days longer than the nights? Where are the days of equal length?

2. Now answer the same four questions for the dates of March 21, June 21, and September 23.

3. What do we mean when we say that the sun rises? When we say that the sun sets?

4. What length of time do you connect with the word *rotation*? With *revolution*? With which word do you connect the word *orbit*?

5. Explain the difference between an astronomer and a geographer.

WHAT DO YOU KNOW ABOUT MAPS?

1. Be prepared to tell the class:

- Why the globe is the only true map of the world.
- How maps were made in early times.

2. Here is a beginning for a list of the things shown on maps. Go through the maps in this book and find as many other

items as you can to add to this list. Star those items that are natural things.

mountains cities railroad lines

WHAT CONSERVATION MEANS

1. What are some of the good changes men can make in land? What are some of the harmful ones?

2. Write two or three paragraphs to explain why conservation is necessary and of much importance to every country. How does conservation affect the way you will live when you grow up?

TALKS ON THE WEATHER

(Do not write in this book.)

1. It is important to know that places in the same latitude in similar parts of continents have almost the same climate because—.

2. A summer day in the interior of a continent in the middle latitudes might be hotter than a summer day in the low latitudes because—.

3. Regions with less than ten inches of rain might be deserts in some latitudes and not in others because—.

TALKS ON VEGETATION

1. List the four chief kinds of natural vegetation and describe the appearance of each.

2. List the four kinds of forests. Draw a picture to illustrate each kind. Tell between which latitudes and on which continents each one can be found.

3. Why do all Mediterranean forests resemble one another?

4. How do the northern forests differ from the tropical forests? From the Mediterranean forests?

Facts About Latin America and the Mediterranean

<i>Country</i>	<i>Area (Square Miles)</i>	<i>Population</i>	<i>Principal Cities (* Means capital city)</i>	<i>Chief Products</i>
Algeria	847,500	8,488,000	* Algiers, 360,700 Oran, 252,500 Bone, 82,400	wheat, barley, oats, wine, olives, tobacco, wool, dates, iron ore
Argentina	1,079,965	16,104,929	* Buenos Aires, 2,457,494 Rosario, 522,403 Córdoba, 287,578 Tucumán, 157,926 Santa Fé, 154,173 Mendoza, 103,879	beef, mutton, wool, hides, cotton, dairy products, wheat, oats, corn, linseed, cereals, flour, forest products, wine, sugar, textiles, paper
Bolivia	416,040	3,787,800	* La Paz, 302,000 Cochabamba, 76,500 Potosí, 40,000 Sucre, 30,000	tin, silver, copper, tungsten, rubber, potatoes, coffee, cacao, sugar, wool
Brazil	3,288,063	48,000,000	* Rio de Janeiro, 2,014,185 São Paulo, 1,776,000 Recife, 397,808 Salvador, 331,609 Pôrto Alegre, 310,817 Belém, 235,576	coffee, cotton, sugar, rice, beans, cacao, rubber, meat, hides, wool, forest products, gold, diamonds, quartz, manganese, iron and steel, yerba maté, silk
British Guiana	83,000	381,325	* Georgetown, 77,585	sugar, coffee, timber, bauxite, balata
British Honduras	8,867	61,503	* Belize, 21,886	mahogany, bananas, chicle, cacao
Chile	286,322	5,715,717	* Santiago, 1,121,751 Valparaíso, 215,614 Concepción, 92,364 Temuco, 84,696	nitrate, iodine, copper, oats, wheat, barley, potatoes, wine, wood, fruit, meat, hides, wool
Colombia	439,997	10,544,670	* Bogotá, 482,480 Medellín, 237,220 Barranquilla, 224,430 Cali, 147,160	coffee, sugar, rice, petroleum, gold, silver, leather, platinum, cotton
Costa Rica	23,000	771,503	* San José, 250,994 Alajuela, 162,167 Cartago, 114,731	corn, beans, coffee, bananas, cacao, sugar, tobacco, wood
Cuba	44,206	4,778,583	* Havana, 800,000 Marianao, 124,918 Camaguey, 80,509	tobacco, sugar, cacao, cereals, bananas, pineapples, fibers, rum
Dominican Republic	19,332	2,182,109	* Ciudad Trujillo, 147,372	sugar, cacao, bananas, coffee, rice, tobacco
Ecuador	174,855	3,200,000	* Quito, 211,174 Guayaquil, 81,893 Cuenca, 53,871	cacao, coffee, rice, balsa wood, tagua nuts, silver, petroleum
El Salvador	13,176	2,018,895	* San Salvador, 123,143 Santa Ana, 98,942	coffee, corn, cacao, balsam, gums, sisal
French Guiana	34,740	28,537	* Cayenne, 11,704	cacao, bananas, wood, balata, hides, gold
French Morocco	153,870	8,175,000	* Rabat, 160,800 Casablanca, 550,800 Fez, 200,900 Marrakech, 237,800	wheat, barley, olives, fruit, phosphates, iron ore, fish
Greece	51,182	7,347,002	* Athens, 487,045 Salonika, 224,748	wheat, corn, tobacco, currants, olives
Guatemala	45,452	3,706,205	* Guatemala City, 176,780	coffee, bananas, chicle, cinchona, gold, hides

<i>Country</i>	<i>Area (Square Miles)</i>	<i>Population</i>	<i>Principal Cities (* Means capital city)</i>	<i>Chief Products</i>
Haiti	10,204	3,500,000	* Port-au-Prince, 200,000	sisal, coffee, cacao, cotton, bananas, sugar, woods
Honduras	44,411	1,200,542	* Tegucigalpa, 55,715	bananas, chicle, coffee, hardwoods
Italy	116,235	46,110,000	* Rome, 1,613,660 Milan, 1,277,013 Naples, 995,257 Genoa, 657,634 Bari, 259,201	textiles, machinery, grains, grapes, olives, macaroni, citrus fruit, nuts, sulfur
Jamaica	4,404	1,237,063	* Kingston, 109,056	sugar, rum, cigars, bananas, coconuts
Libya	679,358	888,401	* Tripoli, 108,240 Bengási, 64,641	dates, olives, cereals, sponges
México	758,062	19,653,552	* Mexico City, 1,448,422 Guadalajara, 236,557 Monterrey, 190,074 Puebla, 148,701 Toluca, 97,962 Tampico, 84,037 Veracruz, 75,756	petroleum, metals, corn, sugar, sisal, wheat, rice, coffee, tobacco, tomatoes, bananas
Nicaragua	57,145	1,148,724	* Managua, 141,941 Matagalpa, 52,073 León, 51,726	cotton, bananas, coffee, cinchona, sugar, cacao, hardwoods, gold
Panamá	28,576	622,576	* Panamá City, 111,983 Colón, 44,393	bananas, cacao, hemp, rice, hardwoods
Paraguay	61,693	1,500,000	* Asunción, 134,025	hides, meat, yerba maté, tobacco, iron ore, lace
Perú	482,258	7,023,111	* Lima, 747,907 Arequipa, 92,747 Callao City, 83,410 Cusco, 52,723	cotton, sugar, corn, wheat, rice, silver, alpaca hair, copper, petroleum, guano
Portugal	35,404	3,711,748	* Lisbon, 709,179 Oporto, 262,309 Funchal, 54,856	wheat, oats, barley, potatoes, wine, olives, cork, minerals, sardines
Puerto Rico	3,423	2,185,000	* San Juan, 230,231 Ponce, 73,397 Mayaguez, 60,789	sugar, molasses, tobacco, pineapples, citrus fruit, coffee, rum, glass products
Spain	195,504	25,877,971	* Madrid, 1,413,691 Barcelona, 1,225,318 Valencia, 520,213 Seville, 375,061	citrus fruit, olives, olive oil, grapes, wine, wheat, flax, textiles, iron ore
Spanish Morocco	18,009	1,082,009	* Tetuan, 73,115	iron ore, lead, grain, fruit, sheep, goats
Suriname (D. Guiana)	55,000	207,684	* Paramaribo, 73,233	bauxite, gold, sugar, rice, fruit, balata
Tangier	225	100,000		wheat, barley, chickpeas, fish
Tunisia	48,300	3,230,952	* Tunis, 364,592 Sfax, 54,637	wheat, barley, olive oil, wine, dates
Uruguay	2,250,000	2,202,936	* Montevideo, 770,000 Paysandú, 51,000 Salto, 30,000	wool, hides, corn, oats, linseed, wine, fruit, beef, mutton
Venezuela	352,143	3,850,771	* Caracas, 400,000 Maracaibo, 112,519 Valencia, 58,000	coffee, cacao, sugar, rice, petroleum, rubber, hides
Virgin Islands	133	30,000	Charlotte Amalie, 9,801 Christiansted, 4,495 Frederiksted, 2,498	sugar, cattle, rum, vegetables, fish, bay oil

Index

This index tells you how to pronounce many of the words in this book. They are divided and spelled the way they should be pronounced. The marks on the letters in the following list stand for sounds. The words in the list tell you the

sounds meant by the different marks. In using this index to study a product, find the product in black type. Indented under it you will often find the names of the countries in which it is produced.

ā as in tāke
â as in câre
ă as in măn
â as in âsk
ä as in fär
á as in sofá

ē as in mē
ë as in sēt
ē as in rivēr
ī as in fīnd
ĭ as in hĭm
ō as in gō

ö as in böx
ô as in fôr
ū as in ūse
û as in būt
û as in būrn
oo as in soön

öö as in böök
oi as in oil
ou as in out
th as in bath
th as in bathe
zh as in pleasure

A

Aconcagua Valley (ä'kón-kä'-gwä), 121-123, 121 (*map*), 138

acorns, 255, 259

adobe, 106, 122, 137

Adriatic Sea (ä'dri-ät'ik), 239, 267, 268, 274, 277, 295

Aegean Sea (ē-jē'an), 239, 240, 287, 288, 289, 295

Africa (ä'f'ri-kä), 45, 223, 238, 240, 244, 245, 260, 290, 309, 316-317

Northwestern, 315 (*map*)

trade and Transportation, 301, 304, 308, 309, 310, 311, 312

See also North African Fringe

agriculture (äg'rĭ-kül-chēr), 21. See also farming

air transportation, 30, 37, 82, 98, 124, 154, 180, 194, 197, 201-202, 218, 231, 257

alcohol, 233, 234, 252

alfalfa, 30, 74, 107, 121, 122, 123, 134, 136, 138, 142, 147, 148, 166, 167

alfalfa-wheat estancias, 149-151

Algeria (äl-jir'ĭ-ä), 238 (*map*), 304, 305

Algiers (äl-jir'z'), 302, 309, 311

alligators, 73, 189, 209

alloys (äl'oiž), 189

alluvial fan (ä-löo'vi-äl), 105-106, 105 (*diagram*), 121, 291

almonds, 254-255, 277

alpaca (äl-päk'ä), 87, 90, 96, 105

Alps, 241, 266, 268, 269, 271, 302

altitude, 8, 9, 21, 66, 68, 93, 96, 323

aluminum, 189, 218

Amazon Basin (äm'ä-zön), 211, 216, 322, 324, 328, 331-332

Amazon Lowland, 58, 64, 70, 102, 180, 207

Amazon River, 58, 86, 94, 98, 180, 207-208, 217

America, 4, 120, 244, 245, 296, 317. See also United States

Andean Countries (än-dē'an), 86, 94, 111

Andean piedmont (pēd'-mönt), 134, 141, 160

Andes (än'dēz), 9, 58, 60-62, 67, 68, 76, 78, 80, 82, 94, 101, 102, 105, 116, 117, 123, 132-134, 173, 208, 302, 328

animals

farm, 82, 93, 106, 255

sea, 101

wild, 142, 209, 312, 325

work, 115, 255

Antarctic Circle, 320

Antarctica, 60, 116, 322

antimony (än'tĭ-mō-nĭ), 108

Antofagasta, Chile (än'tō-fä-gäs'tä), 119, 120

ants, 48, 325

Apennines (äp'ē-ninz), 268, 270, 275, 276, 278

Appian Way (äp'ĭ-än), 266 (*picture*)

apples, 107, 121, 126, 152, 259

Arabia (ä-rä'bi-ä), 40, 301, 304, 307

Arabs (är'äbz), 258, 301, 304, 305, 306, 308, 309, 311

arbor (är'bēr), 173

archipelagoes (är'ki-pēl'ä-gōz), 117

Arctic Circle, 320, 322

Arequipa, Perú (är'rē-kē'pä), 96

Argentina (är'jēn-tē'nä), 56-57 (*map*), 59, 62, 88, 94, 128, 130-161, 167, 170, 173, 185, 237, 267, 282, 328-329

Central, 133 (*map*)

Humid Pampa, 149 (*map*)

Northeast, 138-139

Patagonia, 136, 141-142

regions, 134 (*map*)

trade and transportation,

132, 134, 135, 140, 141, 142, 146, 148, 152-154, 156, 157-158, 160, 161, 329

Arno River (är'nō), 278

Aruba (ä-roo'hä), 75, 160, 234

Asia (ä'zhä), 238, 267, 317, 323, 331

astronomers (äs-trön'ä-mēr), 319

Asunción Paraguay (ä'soon-syön'), 156, 173, 174-175, 176

Atacama Desert (ät'tä-kä'mä), 116, 117, 118, 125

Athens, Greece (äth'ĭnz), 286, 288, 295-296

Atlas Mountains (ät'läs), 302, 303, 306

automobile tires, 204-205, 210, 211

automobiles, 30, 101, 108, 125, 169, 190, 272, 276, 308

Avenida de Mayo (ä'vē-nĭ'dä thä mä'yō), 156, 157

Avenida Rio Branco (rĭ'ō bräng'kō), 194

avocados (äv'ō-kä'dōz), 121, 174

Aztecs (äz'tēks), 1, 2-3, 4, 15

B

babassu palm (bä'bä-soo'), 204

badlands, 200

Bahama Islands (bä-hä'mä), 222, 234

Bahía Blanca, Argentina (bä-ē'ä bläng'kä), 153-154, 160

balata (bäl'ä-tä), 218

Balboa, Vasco (bäl-bō'ä), 4

Balearic Islands (bäl'ĭ-är'ik), 248, 250

balsa (böl'sä), 48

bananas

Africa, 306

Bolivia, 110

Brazil, 198, 207

British Honduras, 218

Central America, 42-45

Colombia, 80

Ecuador, 104

Haiti, 228

Honduras, 36-37

México, 24, 27

Middle America, 42 (*map*)

Panamá, 51

Paraguay, 174

Perú, 96

Puerto Rico, 232

Barbados, (bär-bä'dōz), 234

Barcelona, Spain (bär'sē-lō'-nä), 248, 256-257

barley, 67, 96, 105, 106, 107, 121, 148, 149, 168, 249, 291, 304, 306

Barranquilla, Colombia (bär'-rän-kē'yä), 78, 82

bauxite (bök'sit), 218

bay, 226

bay oil, 234

Bay of Naples (nä'plz), 281

bay trees, 234

beads, 275

beans, 71, 107, 194, 198, 199, 205

Chile, 123

Ecuador, 102

Haiti, 228-229

México, 23, 24, 30

Paraguay, 174, 232

Puerto Rico, 233

Venezuela, 76

beech trees, 276

beef, 74, 154, 166, 169, 175, 185, 198. See also cattle

beehives, 24

beet sugar, 226

Belém, Brazil (bē-lēm'), 210, 211-212

Berbers (bär'bērz), 301, 304, 305, 306, 308

Bering Strait (bĭr'ĭng), 1

beverages, 190

Bilbao, Spain (bäl-bä'ō), 256

binders (bĭn'dērz), 28

birds, 208-209, 325

bismuth (bíz'múth), 109
 Black Sea, 268, 290, 295, 316, 318
 blizzards, 60
 bodega (bó-dé'gä), 138
 Bogotá, Colombia (bó'gó-tä'), 78, 82, 83
 Bogotá Basin, 82
 bolas (bó'láz), 143, 144
 Bolívar, Simón (bó-lé'vār, sē-món'), 77
 Bolivia (bó-llv'á), 59, 86, 93, 94, 95 (*map*), 105–111, 132, 135, 173, 176
 trade and transportation, 107, 110, 111
 bone meal, 159
 boots, 189
 Brazil (brá-zil'), 5, 47, 56–57, (*map*), 59, 125, 128, 139, 167, 170, 173, 178–213, 237, 260, 267, 282, 317
 North, 207–211
 Northeast, 201–211
 regions and products, 183–184 (*map*)
 Rio de Janeiro, 195 (*map*)
 São Paulo, 188 (*map*)
 South 185–188
 Southeast, 181 (*map*), 188–201
 trade and transportation, 180, 183, 187, 189, 190, 194, 196–197, 201, 204, 206, 209, 211, 212, 213
 Brazil nuts, 179, 209, 211
 Brazilian Highlands, 58, 180, 186
 Brazilian tree cotton, 204–205
 Brenner Pass (brēn'ēr), 269
 breweries, 124, 187
 bridges, 260, 279
 British Guiana (gē-ān'á), 216, 217–218
 British Honduras (hōn-dōō'-rás), 17 (*map*), 37, 47, 216, 218
 British Isles, 316
 British people, 120, 146, 147, 164, 170
 British West Indies, 234
 broadleaf trees, 21, 173, 182, 183, 242, 250, 325–326
 Buenaventura, Colombia (bwā'nā-vān-tōō'rā), 68, 80
 Buenos Aires, Argentina (bwē'nós í'réz), 60, 124, 130, 132, 134, 136, 138, 146, 149, 153–154, 155–159, 157 (*map*), 169
 buffer state (būf'ēr), 170
 building materials, 138, 169, 306
 Bulgaria (bül-gár'á), 296
 bunch grass, 123, 144, 147
 burros (būr'ōz), 106
 butter, 149, 307
 by-products, 120

C

Cabral, Pedro Alvares (kā-brāl', pā'dró āl'vá-rāz), 5
 cacao (kā-kā'ō), 45, 51, 76, 83, 104, 179, 206, 217, 228, 229
 in Middle America, 45 (*map*)
 Cacao Belt, 206
 Calamar, Colombia (kā'lā-mār'), 79
 calendar, 2
 caliche (kā-lē'chē), 120
 California, 60
 Callao, Perú (kā-yā'ō), 100–102
 camel, 87, 301, 308
 Campinas, Brazil (kām-pē'-nās), 193
 Canada, 59, 67, 178, 322, 327
 Canal Zone, 49, 50 (*map*), 196
 canals, 122, 137, 205, 212–213, 217, 273, 274, 275
 canary birds, 302
 Canary Islands, 302
 candy factories, 83, 104
 canneries, 30, 175, 261
 Cantabrian Mountains (kān-tā'brí-ān), 246
 canvas, 189
 Cape Horn, 55, 118, 127
 Caracas, Venezuela (kā-rā'-kās), 76–78, 82
 Caracas-Valencia region, 77 (*map*)
 caravan routes, 241, 306, 309, 312
 carbon dioxide (kār'bón dī-ōk'sid), 252
 Caribbean Lowland (kār'i-bē-ān), 27, 38, 67, 68
 Caribbean Sea, 4, 17 (*map*), 66, 67, 69, 75, 76, 317
 carnauba palms (kār-nou'ba), 203–204, 209
 Cartagena, Colombia (kār'tā-hē'nā), 78–79
 Carthage (kār'thij), 303–304
 casa grande (kā'sā grān'dā), 40
 casa de hacienda (thā hā'si-ēn'dā), 121
 Casablanca, Morocco (kā'sā-blāng'kā), 309
 Casbah (kāz'bā), 311
 Catalonia (kat'á-lō'ní-á), 248, 256
 Cathedral of St. Peter, 278–279
 Catholic Church, 279
 cattle, 8, 15
 Argentina, 136, 141, 144–145, 146, 147, 149, 150, 151, 152, 153–154, 159, 328–329
 Brazil, 179, 185, 198, 204, 212

Caribbean countries, 70, 72–73
 Central America, 45–46
 Chile, 114, 122, 123, 126
 Colombia, 80, 83
 Ecuador, 102, 104
 Greece, 294
 Haiti, 229
 Italy, 271, 278
 Marajó Island, 208
 México, 26, 28–29
 Paraguay, 172, 174, 175
 Perú, 93, 96
 South America, 64, 167–168, 167 (*map*)
 Spain, 255, 258
 Uruguay, 165, 167, 169, 170
 Venezuela, 76, 78
 cedar trees, 218, 306
 cement, 29, 82, 190
 centavo (séntā'vō), 24
 Central America, 16–17 (*map*)
 36–53, 325
 trade and transportation, 37, 38, 43, 51
 Central Range, 68, 82
 Central Valley, 117, 118, 121, 122–125, 126
 cereals, 168, 259, 276
 Cerro de Pasco, Perú (sēr'rō thā pās'kō), 96
 Chaco War, 176
 channels, 258
 charcoal, 187, 201, 276–277
 Charlotte Amalie, St. Thomas (shār-lōt'ē ā-mā'il-ā), 234
 chasm (kǎz'm), 110
 cheese, 307, 151, 272
 cheesecloth, 225
 chemicals, 80, 276, 295
 chestnuts, 276
 Chichicastenango, Guatemala (chí-chí-cās'tē-nāng'hō), 39–40
 chicle (chē'klā), 47, 218
 Chile (chíl't), 55, 62, 88, 114–128, 116–117 (*map*), 132, 134, 144, 237, 241, 267, 329
 Aconcagua Valley, 121 (*map*)
 hacienda, 122 (*map*)
 nitrate fields, 119 (*map*)
 trade and transportation, 117, 119, 124, 128, 329
 chile peppers, 30
 China, 178, 272
 Christianity, 5, 14
 chuño (chūn'yō), 89
 churches, 14, 31, 258, 278–279
 cigars and cigarettes, 82, 174, 226, 258, 294
 cinchona tree (sín-kō'nā), 47
 citrus fruits, 67, 168, 253–254, 281
 Ciudad Bolívar, Venezuela (syōō'háth bō-lé'vār), 70
 Ciudad Trujillo (trōō-he'yō), 228
 civilized, 1

clay maps, 91, 318
 climate, 8–9
 altitude affecting, 60–62, 80–81
 and vegetation, 322–327
 in Atacama desert, 116
 in Brazil, 181–182
 in Caribbean countries, 66
 in Gran Chaco, 139
 latitude affecting, 118
 ocean winds affecting, 59–60
 Perú Current affecting, 101
 in southern hemisphere, 55
 in tropics, 68
 cloth, 39, 90, 233, 257, 310.
 See also textiles
 clothing, 30, 82, 189
 clover, 123, 273
 coal, 30, 125, 128, 131, 146, 153, 154, 160, 187, 201, 257, 272, 283, 287, 328
 coal mines, 122, 125, 187, 256
 Coast Range, 68, 117, 119, 120, 124
 coca (kō'ká), 97, 110
 cocaine (kō-kān'), 97
 Cochabamba, Bolivia (kō'chā-bām'bā), 107
 coconuts, 45, 51, 74, 217, 233
 coffee
 Brazil, 179, 188, 191–193, 194, 198, 213
 Caribbean countries, 67
 Central America, 40–42
 Colombia, 67, 78, 81, 82, 83
 Dominican Republic, 228
 Dutch Guiana, 218
 Ecuador, 104
 Haiti, 228, 229
 México, 27, 32
 Middle America, 42 (*map*)
 Perú, 97
 Puerto Rico, 230, 232, 233
 South America, 192 (*map*)
 Venezuela, 75, 76
 coffee berries, 41–42, 192
 coffee fazenda (fā-zēn'dā), 192–193
 coffee trees, 40–41, 76, 191, 228
 coke, 187
 Colombia (kó-lom'byā), 49, 55, 66, 67, 68, 69 (*map*), 70, 78, 81, 82, 83, 88, 101, 328
 products, 79 (*map*)
 trade and transportation, 68, 78, 79, 81, 82, 83
 Colón, Panamá (kō-lōn'), 50–51
 colonies, 188, 332
 Columbus, Christopher, 3–4, 67, 220, 244, 276, 302–303
 commercial centers, 160, 196, 226, 258, 272, 309
 commercial crops, 15, 26, 27, 67, 86–87, 107, 179, 231, 232, 234, 237, 267

compass, 316
Comodoro Rivadavia, Argentina (cōmō-thō'rō rē'vā-thā'-vyā), 142
Concepción, Chile (kōn'sēp-syōn'), 118, 124, 125
Congo Basin (cōng'gō), 322
conifers (cōn'fī-fērz), 21, 325-326, 327
conservation (cōn'sēr-vā'-shūn), 199, 211, 253-254, 273, 276, 296, 332, 333
conveyors (kōn-vā'ērz), 194
copper, 32, 96, 120, 122, 128, 201, 256, 258, 260
 mining, 114 (*picture*)
Coquimbo, Chile (kō-kēm'-bō), 125, 128
coral polyps (kōr'ēl pōl'ipz), 221
coral reefs, 221
Córdoba, Argentina (kōr'dō-vā), 160
Corinth, Greece (kōr'inth), 288
Corinth Canal, 295
cork, 252
cork oak, 260, 306
cormorants (kōr'mē-rāntz), 100
corn, 1, 2, 158, 159-160, 330
 Argentina, 134, 137, 148, 149, 150, 151, 152, 153-154, 160
 Bolivia, 107
 Brazil, 186, 194, 198, 199, 205, 207
 Chile, 123
 Colombia, 67, 328
 Ecuador, 102, 105
 Greece, 291, 292
 Guatemala, 38
 Italy, 272-273, 276, 278
 México, 21, 23-24, 32
 Paraguay, 172, 173, 174
 Perú, 89, 96
 Portugal, 259
 Puerto Rico, 232
 Uruguay, 166, 168
 Venezuela, 76
Corsica (kōr'sī-kā), 268
Cortés, Hernando (kōr-tēz', ěr-nān'dō), 4
Costa Rica (kōs'tā rē'kā), 17 (*map*), 37, 38, 40, 42, 45
cotton, 67, 281, 283, 332
 Africa, 304
 Argentina, 140-141, 161
 Brazil, 179, 189, 194, 204-205, 206-207, 213
 Central America, 45
 Colombia, 80, 83
 Greece, 292
 Haiti, 229
 Italy, 272, 276
 México, 26
 Paraguay, 173, 174-175, 176
 Perú, 97, 100, 102

Portugal, 261
 Spain, 256, 257
 Venezuela, 76, 78
 West Indies, 234
cotton gin, 174-175
cotton textiles, 29, 90, 189, 276
cottonseed oil, 102
cottonwood trees, 138
Crete (krēt), 289
Cruz, Dr. Oswaldo (krōōz, ōs-vā'l'dō), 196
Cuba (cū'bā), 17 (*map*), 223-226
cubic yards, 19
Cuenca, Ecuador (kwēng'kā), 102
Cuernavaca, México (kwēr'-nā-vā'kā), 20
cultivation, 76, 102, 152, 161, 199, 218, 260, 280. *See also* drainage, irrigation, soil, topsoil
Curaçao (kōō'rā-sā'ō), 75, 234
Curitiba, Brazil (kōō'rē-tē-bā), 187
currants, 293, 295
Cusco, Perú (kōōs'kō), 87, 89, 90, 91
Cusco Basin, 88, 95
cut-over land, 291
Cyclades (sīk'lā-dēz), 289
Cyprus (sī'prēs), 240

D

dairy farms, 126, 149, 151, 198, 272
dairy products, 78, 153-154, 272
dams, 137, 160, 205, 212-213, 254, 282, 287, 296
dates and date palms, 255, 301, 303, 306, 307-308
deciduous trees (dī-sīj'ōō-ās), 47, 183, 325-326
degrees of latitude, 8, 131. *See also* latitude
degrees of longitude, 11. *See also* longitude
deltas, 268, 288, 291, 302
democratic government, 52, 170
dependent countries, 216
deserts, 62, 241, 242, 342, 331. *See also* Atacama Desert, Sahara
Devils Island, 218
dialects (dī'ā-lēkts), 40
diamonds, 70, 201, 218
digging sticks, 198, 330
dikes, 217, 273
dogs, 115, 142
Dominican Republic (dō-mīn'-ī-kān), 223, 226, 227-228
donkeys, 174, 194, 255, 260, 294, 304, 307, 308
drainage, 43, 193, 212-213, 260, 273, 280, 281, 282, 283, 296

drainage basin, 59
drainage divide, 59
driveways, public, 166
drouths, 60, 282, 290-291, 241, 325
drugs, 291
dry farming, 292
Dry Pampa, 132
dry season, 72, 73
dust storms, 118
Dutch Guiana (gī-ā'nā); *see* Suriname
Dutch people, 217
dwarf trees, 291
dyes, 29

E

earth, 316, 317, 319-322
earthquakes, 138
Eastern Range, 68, 69, 78
ebony (ēb'ēn-ī), 209
Ebro River (ē'brō), 249
Ebro Valley, 252
Ecuador (ēk'wā-dōr), 55, 86, 93, 94, 95 (*map*), 101, 102-105
education, 82, 102, 155-156, 176, 212, 213, 230, 231, 279. *See also* schools
eggplant, 174
eggs, 24, 39
ejido (ā-hē'thō), 22, 26
Egypt, 300, 301, 303
El Salvador (ēl sāl'vā-dōr), 17 (*map*), 36, 38, 42
Elba (ēl'bā), 268
electric lights, 110
electric power, 29, 77, 101, 120, 124, 139, 160, 194, 201, 257, 271-272, 276, 280-281, 282, 283. *See also* hydro-electric power
electric power lines, 256
electric wires, 210, 218
electrical equipment, 201, 257
emigration (ēm'f-grā'shūn), 282
engenho (ēn-zhēn'yō), 205, 206
engine parts, 109
engines, 153
England, 147, 156, 245, 246, 253, 256, 257, 259, 310. *See also* British people
equator, 8, 20, 55, 60, 62, 66, 81, 154, 217, 301, 320, 322
equinox (ē'kwī-nōks), 90, 320
erosion (ē-rō'zhūn), 231, 276, 282, 287, 296, 304, 312, 332, 333
escarpment (ēs-kārp'mēnt), 180
estancias (ēs-tān'syāz), 144-145, 148-149, 161, 165-166
estancieros (ēs-tān'sī-ēr'ōz), 147-148
estuary (ēs'chōō-ēr'-ī), 59, 208
Ethiopia (ē'thī-s'pī-ā), 40

Euboea (ū-bē'ā), 289
eucalyptus trees (ū'kā-lip'-tūs), 166
Eurasia (ū-rā'zhā), 290, 327
Europe, 151, 238, 240, 245, 267, 317, 331
European settlers (ū'rō pē'-ān), 217, 310, 312, 329
evergreen trees, 173, 182-183, 324
explorers, 220, 316-318. *See also* Portuguese explorers, Spanish explorers
explosives, 118, 120
exports; *see* trade and transportation
extinct (ēk-stīngkt'), 19

F

factories, 237, 312, 333
 Argentina, 159, 160
 Brazil, 189, 194, 196
 Chile, 124
 Italy, 272, 276, 333
 Puerto Rico, 230, 233
 Spain, 251, 256
factory machines, 115, 131, 257
Far East, 287
farm lands, 58, 179, 183, 280, 282, 283
farm machinery, 125, 176, 212-213, 237
 Africa, 304
 Cuba, 224
 Greece, 292, 296
 Haiti, 229
 Humid Pampa, 148, 152, 161, 329
 Italy, 267, 273
 Paraguay, 173-174
 Puerto Rico, 231
 Spain, 256, 262
farm products, 153, 188, 261, 281, 295, 296
farm tools, primitive, 173, 198, 248, 304, 312, 330
farming, 2, 7-8, 88, 89, 90, 330
 Africa, 304, 305-306, 307
 Argentina, 131, 135, 137, 139, 146-152, 161
 Bolivia, 105, 107
 Brazil, 186, 187, 204
 British Guiana, 217
 Chile, 114-115, 122, 126
 Colombia, 80, 81-82
 Greece, 291-294
 Italy, 267, 273, 276, 277, 279, 281
 Mediterranean countries, 237
 México, 14, 22-25
 Paraguay, 172, 173, 176
 Perú, 94-95
 Portugal, 259-260
 Puerto Rico, 231-232
 Spain, 245, 246, 248-255, 258

farming—*Continued*
 Uruguay, 168–169
 Venezuela, 76, 78
farming methods, 24–25, 82, 96, 198, 224–225, 248, 253, 256, 259–260, 262, 273, 283, 292, 296, 304, 308, 312, 330, 333
farming regions, 151, 288
Fazenda Chapadão (fă-zên'dă chă'pă-doun'), 192–193
fazendas, 192–193, 197–198
felt, 307
felt hats, 276
fences, 140, 146, 152, 166, 308
ferment (fûr'mënt), 252
fertilizer, 28, 29, 90, 99–100, 101, 103, 118, 120, 159, 249, 260, 267, 273, 292, 296, 312
Fez, Morocco (fëz), 309–310
figs, 121, 277, 291, 293, 307
filament (fil'ă-mënt), 109
fincas (fin'z'kăz), 224, 225
fjords (fyôrdz), 60, 118, 127
fir, 21, 327
fire farming, 199, 213
fish and fishing, 32, 67, 90, 101, 202, 209, 212, 232, 246, 260, 261, 287, 291, 295, 333
fishermen, 260, 262, 273, 276, 295, 332
fishskin, 189
flags, 216, 223
flax, 138, 148, 149, 151, 273
flood plain, 180, 208
floods, 60, 137, 140, 167, 175, 181, 202, 205, 254, 279, 282, 290–291, 296
Florence, Italy, 278–279
flour, 102, 124, 138, 159, 168, 190, 233, 282
fodder, 250
food, clothing and shelter, 213, 328, 332
food crops, 7, 123, 231, 232, 234, 262, 292
food industries, 160–161, 187, 190, 196
food supply, 75, 78, 100–101, 120, 172, 176, 212, 218, 233, 251, 279, 282, 283, 287, 332–333
foreign trade, 46, 68, 130, 147, 158, 170, 196, 224. *See also* trade and transportation
forest products, 52, 179, 187, 198, 209, 213, 218
forests, 64, 306, 312, 324, 333
 Africa, 301, 306
 Argentina, 134, 141
 Amazon Basin, 216
 Brazil, 179, 182–183, 185–186, 267
 Cape Horn, 118
 Central Valley, 126
 Colombian Andes, 80
 Gran Chaco, 132
 Greece, 287, 288, 290–291, 295, 296

 Guiana Highland, 70
 Italy, 276, 282
 Paraguay, 173
 Perú, 94
 Uruguay, 165
 Venezuela, 76
 world, 326–327 (*map*)
France, 223, 228, 241, 256, 272, 301, 304, 309, 310, 311
free port, 275, 296
French Guiana (gê-ăn'ă), 216, 217, 218
French language, 227, 228
French North Africa, 304
French settlers, 126, 147, 164, 227, 228, 305
French West Indies, 234
frosts, 24, 135, 183, 242, 253
frozen meat, 167
fruit orchards, 138, 151–152, 230, 232
fruits, 175, 193, 207, 211
 Argentina, 142, 149
 Bolivia, 107
 Caribbean lands, 67
 Chile, 123
 Colombia, 80
 Guatemala, 39
 México, 26
 North African oases, 306
 Paraguay, 174
 Puerto Rico, 233
 See also citrus fruits
fuel, 161, 225, 262, 312
fuel oil, 75, 31. *See also* oil
furniture, 125, 160–161, 189, 190, 196, 218

G

galvanized iron (găl'vă-nîzd), 141, 173
gannets (găn'tîz), 100
gasoline, 31, 75, 101, 233
Gatun Lake (gă-tôon'), 50
gauchos (gou'chô), 130 (*picture*), 145
gems, 274
generators, 198, 272
Genoa, Italy (jên'ô-ă), 267, 270, 272, 275–276
German immigrants, 126, 147, 164, 186, 192
Germany, 256
ghost town, 107
Gibraltar (jîb-rôl'tër), 304
glaciers, 55 (*picture*), 58, 132, 268
glass, 31, 160–161, 190, 275, 318
goats, 24, 145, 229, 242, 255, 276, 282, 287, 294, 296, 307, 308
Goethals, General George W. (gô'thălz), 50
gold and gold mining, 70, 97 (*picture*), 258, 274
 Brazil, 179, 200, 206, 213
 British Guiana, 218

 Colombia, 80
 Dutch Guiana, 218
 Ecuador, 104
 México, 32
 Panamá, 51
 Perú, 90, 93, 96
 Portugal, 260
gondolas (gôn'dô-lăz), 274
Goodyear, Charles, 210
Gorgas, William C. (gôr'găs), 49–50, 196
government, 111, 128, 205, 229, 230, 233, 237, 241, 280, 282, 323
grain elevators, 158, 160
grains, 30, 76, 80, 83, 95, 107, 122, 130, 151, 160, 168, 272–273, 287, 329
Gran Chaco (grăn chă'kô), 94, 105, 132, 134, 139–140, 173
grapefruit, 193, 232
grapes,
 Africa, 303, 304–305
 Argentina, 136, 142, 329
 Brazil, 187, 193
 Chile, 123
 Greece, 292
 Italy, 273, 276, 277, 278, 280, 281
 Portugal, 259
 Spain, 250, 251–253, 256
grass seed, 144
grasslands, 28, 46, 62, 74, 80, 96, 127, 134, 143, 144, 151, 152, 166, 167, 173, 182–183, 227, 303, 324, 328
grazing, 96, 123, 149, 165, 183, 232, 291, 294. *See also* cattle, sheep
Great Britain, 7, 48, 99, 132, 153, 159, 160, 167, 223, 233, 236. *See also* British people, England
great circles, 154–155; on map, 154
Great Dipper, 316
Great Escarpment, 180, 183, 188, 194
Great Plains, U.S.A., 322, 330
Great River; *see* Guadaluquivir
Greater Antilles (ăn-tîl'ez), 222, 223
Greece, 239, 240, 269 (*map*), 286–297, 324
 trade and transportation, 286, 287, 292, 293, 295, 296
Greek islands, 295
Greek sailors, 240
Greenland, 301, 308
growing season, 67, 137, 149, 152, 323
Guadalajara, México (gwă'-dă-lă-hă'ră), 30
Guadalquivir (gwă'dăl-kê-vêr'), 246, 258
Guadalquivir Valley, 250, 252
Guanabara Bay (gwă'nă-bă-ră), 194

guanaco (gwă-nă'kô), 143
guano (gwă'nô), 100, 101
Guarani Indians (gwă-ră'nê), 172
Guatemala (gwă'tê-mă'lă, 14, 16 (*map*), 36, 37, 38–39, 40, 42
Guatemala City, Guatemala, 51–52, 52 (*picture*)
Guayaquil, Ecuador (gwă'yă-kêl'), 103, 104–105
Guayas Lowland (gwă'yăs, 103–104
Guayas Valley, 104
Guiana colonies (gê-ă'nă), 217–218
Guiana Highland, 58, 70, 217
Gulf Coastal Plain, 18
Gulf of California, 20
Gulf of Corinth (kôr'inth), 293
Gulf of Guayaquil (gwă'yă-kêl'), 103
Gulf of México, 20–21, 31, 317
gums, 179, 209
gunpowder, 120
gypsies, 258

H

haciendas (hă'sî-ên'dă), 25–26, 31–32, 87, 92, 97–98, 105, 115, 121–122, 126, 128
 map of Chilean, 122
Haiti (hă'tî), 223, 226–227, 228–229
hams, 259
hamstring, 145
handcrafts, 24, 31, 40, 90, 111, 233, 310
harbors, 218, 240, 246, 261, 302
hardwood trees, 179, 209, 211, 217, 331–332
harness making, 135
Havana, Cuba (hă-vă'nă), 226
hay, 126
health conditions, 230–231
heartwood, 140
heather (hêth'êr), 255
hemispheres, 154
hemp, 273, 276
herdsmen, 187, 245, 296
Hereford cattle (hêr'ê-fêrd), 166, 185
hides and skins, 97, 145, 148, 154, 160, 167, 169, 170, 175, 176, 185, 187, 229, 258, 306
highways, 77, 78, 82, 119, 166, 194, 197, 198, 213, 230, 245, 296
hinterland (hîn'têr-lănd), 187
Hispaniola (hîs'păn-yô'lă), 17 (*map*), 222, 226–229
hoses, 173, 188, 199, 330
hogs; *see* swine
holly tree, 139

Honda, Colombia (hǒn'dá), 81
Honduras (hǒn-dōō'ráis), 17 (*map*), 36-37, 38
horsepower (hórs'pou-ér), 190
horses, 93, 122, 123, 143, 144-145, 146, 150, 194, 198, 294, 328-329
houses, 126, 138, 186, 228, 310. *See also* adobe, mud huts
Humid Pampa (hū'mýd pām'-pá), 131, 132, 134, 141, 142-161; land use, 149 (*map*)
humidity (hū-mýd't-tí), 74
hunting, 127, 139, 142-143, 144, 145, 152, 198, 273, 332
hurricanes (húr't-kánz'), 222-223
hydro-electric power (hí'drō-ě-kě'trík), 190, 257, 262, 271, 272, 287, 312

I

Iberia (í-bēr'á), 244, 288
Iberian Peninsula, 3, 239, 241-248, 266, 318
ice sheets, 58
Iguassú Falls (ě-gwá-sōō'), 138
immigrants (ím't-grántz), 100, 137, 140, 147, 168, 212, 329
imports; see railroads, trade and transportation
Inca Indians (íng'ká), 1, 3, 87-91, 88 (*map*), 90, 92-93, 95, 103, 105, 107
independent countries, 216, 223
India (ín'dí-á), 201, 244, 260-262, 317, 323
Indian Ocean, 317
Indians, 1, 4, 15, 37, 64, 67, 80, 97, 105, 106-107, 127, 144, 152, 217, 328, 329
industrial cities, 102, 272, 245
industrial way of living, 7
industries, 115, 193-194, 237, 261, 262, 276, 280-281, 283, 295, 309
inquilinos (ín'ki-lě'nós), 115, 122, 123-124, 126
insects, 48, 62-63, 72, 75, 140-141, 185, 209, 225, 325
interior (ín-tlir't-ér), 179
international (ín-tēr-násh'ün-ál), 304
iodine, 120, 128
Ionian Islands (í-ō'ní-án), 293
Iquique, Chile (ě-kě'ká), 119, 120
Iquitos, Perú (ě-kě'tós), 59, 97, 98
iron, 125, 128, 153, 189, 258, 272, 276, 283, 287
Atacama Desert, 125
Brazil, 189, 200-201
Guiana Highland, 70

North African Fringe, 312
México, 30
Spain, 256
See also pig iron, steel
irrigation, 2, 74, 89, 93, 246, 254, 328, 333
Africa, 303, 304, 306, 307
Argentina, 134, 135, 136, 137, 140, 142, 160
Brazil, 205
Chile, 118, 121, 122, 123
Greece, 291, 296
Haiti, 228
Italy, 281, 282, 283
Portugal, 260
Perú, 98, 100-101
Spain, 253
island chain, 220-221
Israel (ís'rā-él), 290
Isthmus of Corinth, 288
Isthmus of Panamá, 4, 38, 48
Italian colonies, 304, 312
Italian immigrants, 126, 147, 158, 164, 186, 187, 236, 329
Italian Riviera (rě-vyá'rá), 267
Italy, 237, 239, 241, 266-283, 269 (*map*), 287, 301, 308, 318, 324
trade and transportation, 275-276, 278, 281, 282, 283, 333
ivory, 309
Ixtacihuatl (Sleeping Lady) (ěs-tā-sě'wā't-l), 19, 29

J

Jamaica (já-mā'ká), 17 (*map*), 234
jangadas (zhān-gá'tház), 202-203
Japan, 293
Java (já'vá), 226
Jerez, Spain (há'rās), 253
jerked beef, 190
jewelry, 31, 104
Jones, John Paul, 311
junction (júngk'shűn), 208
jungle, 182, 301
juniper trees, 306
jute, 276

K

Kaieteur Falls (ki'ě-tōōr'), 217, 219 (*picture*)
knitting mills, 102
Koran (kō'rān), 311

L

La Casa Rosada (lá ká'sā rō-zá'thā), 157
La Guaira, Venezuela (lá gwí'rá), 78
La Paz, Bolivia (lá pás'), 107, 109-111, 110 (*diagram*)

La Plata, Argentina (lá plá'-tā), 142, 158, 160
La Rioja, Spain (lá ryō'hā), 253
labor, 147, 212
on coffee plantations, 192
in nitrate beds, 119
in rubber industry, 211
skilled, 276, 280, 283
on sugar plantations, 206, 226, 228, 232
on tobacco farms, 225
lagoons (lá-gōōnz'), 180, 187
Lagunillas, Venezuela (lá-gōō-ně'yās), 74
Lake Atitlán (ā'tē-tlān'), 39 (*picture*)
lake beds, 119, 278
Lake Llanquihue (yāng-kě'-wā), 127
Lake Maracaibo (mā'rā-ki'-bō), 66 (*picture*), 67, 69, 74, 75, 76
Lake Titicaca (tē'tē-kā'kā), 87, 105, 106, 109
Lake of Valencia (vā-lēn'shí-ā), 74
lakes, 302, 306
land, 131, 328-333. *See also* cultivation of land, soil
landowners, 3, 15, 152, 212
landslides, 282
language, 1, 24, 172, 179, 256
larch, 327
lard, 159 (*picture*)
latex (lá'těks), 209-210
Latin America, 1, 4, 8-11, 55, 236-237, 317, 332
settlement, vi (*map*)
latitudes, 8, 20, 59, 60, 62, 132
high, 322
low, 66, 114, 241, 322-323
middle, 114, 183, 322-323, 325-326
lava (lá'vá), 18, 19, 221, 280
laws, 253-254, 266-267, 276
lead, 32, 96, 109, 201, 256, 282, 295
leather, 87, 124, 125, 154, 187, 189, 258
leather products, 189, 190, 275, 295, 310
Lebú, Chile (lá-vōō'), 25, 128
lemons, 33, 121, 253, 281, 304
Lesseps, Ferdinand de (d' lě-sěps'), 48
Lesser Antilles (ān-tíl'ěz), 222, 223
Libya (lí'bí-á), 300, 304, 308, 312
lighters, 58, 226
Lima, Perú (lě'mā), 91-92, 93, 98, 99, 100, 101-102, 105, 110
limes, 24
limestone, 125-126, 221
linen textiles, 189
linoleum, 138

linseed, 138, 148, 160, 161, 168, 169
linseed oil, 138, 148, 154
Lisbon, Portugal (líz'bűn), 246, 259, 261
livestock, 151, 160, 255, 258. *See also* cattle, goats, sheep, swine
living conditions
Chile, 124
Haiti, 229
Greece, 287, 296
Italy, 267, 282-283
Puerto Rico, 230-231
llama (lá'mā), 87-88, 89, 96, 105, 106, 110-111, 143
llaneros (lyā-ně'r'ōs), 70-71, 72-73, 74
llanos (lyā'nōs), 69, 74, 82
locks, 50
locusts (lō'kűsts), 141
loess (lō'sě), 144, 152
logging, 140
longitude, lines of, (lōn'jítűd), 10, 154, 318
Lower California, 18, 33
lumber and lumbering, 47, 102, 126, 169, 187, 190, 233, 267, 283, 333

M

macaroni (mă'ká-rō'ní), 281
Macedonia (măs'ě-dō'ní-á), 288, 292, 296
machetes (mā-chā'tās), 23, 97, 173
machine tools, 109
machinery, 30, 161, 169, 189, 194, 206, 212, 213, 257, 272, 276, 332
Madrid, Spain (mā-dríd'), 258
Magdalena River (măg'dā-lā'nā), 68-69, 78, 81, 82, 83
Magdalena Valley, 68, 78, 79
Magellan, Fernando (mā-jěll'-ān), 4, 244, 317
maguay (mā-gā'ě), 26-27
mahogany (mā-hōg'-ā-ní), 47-48, 209, 218
Málaga, Spain (māl'-ā-gā), 252, 253
malaria (mā-lār'-ā), 48, 278, 281, 282
Malaya (mā-lā'ā), 211
Manaus, Brazil (mā-nā'ōōs), 208, 210, 212
manganese (măng'gá-něs), 201
mangoes (măng'gōz), 174, 193
manioc (măn't-ōk), 11, 71, 76, 172, 173, 174, 199, 207
manufacturing, 75, 78, 128, 157, 158-159, 160-161, 169, 176, 188, 196, 237, 261
maps, 91, 318-319
Argentina
Central, 133
Humid Pampa, 149

maps—*Continued*

Regions, 134
Buenos Aires, 157
Brazil
Regions and products, 184
Rio de Janeiro, 195
São Paulo, 188
Southeastern, 181
Canal Zone, 50
Caracas-Valencia region, 77
Caribbean Sea, 17
Central America, 16–17
Chile, 116–117
Aconcagua Valley, 121
Hacienda, 122
Nitrate fields, 119
Inca Empire, 88
Italy and Greece, 269
Latin America
Looking south to, 12–13
Population, 11
Settlement, vi
Mediterranean region, 238–239
Citrus fruits, 253
Early map, 319
Grapes, 252
Olives, 250
Population, 240
Rainfall, 263
Vegetation, 242
Wheat, 249
Middle America, 16–17
Bananas, 42
Cacao, 45
Coffee, 42
Population, 11
Rainfall, 20
Vegetation, 21
Northern hemisphere, 10
Northwestern Africa, 315
Perú Current, 101
Perú, Ecuador, and Bolivia, 95
Population
Latin America, 11
Mediterranean region, 240
World, 330–331
Rainfall
Middle America, 20
Mediterranean region, 263
South America, summer and winter, 72
South America, yearly, 61
Rome, 279
Seasons, 321
South America, 56–57
cattle, 167
coffee, 192
population, 11
sheep 141
rainfall, summer and winter, 72
rainfall, yearly, 61
vegetation, 63
Spain and Portugal, 247

Vegetation
Middle America, 21
Mediterranean region, 242
South America, 63
World (forests), 326–327
Venezuela and Colombia, 69
Products, 79
Western hemisphere airlines, 155
World
Forests, 326–327
Population, 330–331
Maracaibo, Venezuela (mä'-rä-ki'hō), 75–82
Maracaibo Basin, 74
Maracaibo Lowland, 68, 69
Marajó Island (mä'rä-zho), 208
marble, 295
Marco Polo; *see* Polo, Marco
marmalade, 253
Marrakech, Morocco (mä-rä-kēsh), 309
Mayas (mä'yáz), 1, 2, 14, 39
meat and meat packing, 168–169, 251, 329
Argentina, 130, 136, 145, 147, 148, 152, 159, 160
Brazil, 190
Chile, 127
Haiti, 229
Paraguay, 176
Puerto Rico, 233
Uruguay, 167, 169, 170
Venezuela, 78
Medellín, Colombia (mě'dē-yēn'), 82, 83
medicine and medical care, 120, 212, 333
Mediterranean climate (měd'-l-tē-rä-nē-än), 241–242, 270, 280, 282, 290, 300
Mediterranean crops, 277, 287, 292, 302
Mediterranean scrub forest, 300, 303, 304, 306, 325
Mediterranean Lands, 236–312
Mediterranean Sea, 238–240, 241, 266, 276, 287, 288, 290, 295, 300, 301, 308, 316, 317, 318
Mediterranean village, 277–278
Meknès, Morocco (mēk-nēs'), 309
melons, 24, 175
Mendoza, Argentina (mēn-dō'sä), 136, 137–138
mercury (mēr'cū-rī), 32, 256
Mérida, Venezuela (mä'rē-thä), 78
Merino sheep (mē-rē-nō), 166
Meseta (mē-sä'tä), 245, 246, 247–248, 249, 258, 266
mestizos (mēs-tē-zōz), 15
metallurgy (mēt'al-ēr'jī), 189

metals and metal industries, 189, 257, 279, 280–281, 317
Mexican Lowlands, 18
Mexican village, 22–23
México (*English*, mēk'sī-kō; *Spanish*, mē'hē-kō), 4, 14–35, 16 (*map*), 47, 122, 237, 325
exports, 32 (*graph*)
trade and transportation, 29–30, 32, 50
Mexico City, México, 3, 14, 15, 20, 23, 24–25, 29–30
Middle America, 16–17 (*map*) 18
Bananas, 42 (*map*)
Cacao, 45 (*map*)
Coffee, 42 (*map*)
Rainfall, 20 (*map*)
Vegetation, 21 (*map*)
migratory (mī'grā-tō'rī), 1
Milan, Italy (mī-län'), 271, 272, 275
milk, 24, 26, 149, 150, 198, 229, 255, 307
millstones, 282
minarets (mīn'a-rēs'), 310
Minas Gerais (mē'nä zhā-ris'), 199–200, 206
minerals and mining, 131, 312, 332, 333
Africa, 312
Brazil, 179, 188, 199–201
Bolivia, 108–109
Chile, 120–121, 128
Ecuador, 104
México, 32
Perú, 86–87, 96
Spain, 256, 258, 262
Misiones (mē-syō'nās), 138–139
mixed crops, 278, 280, 325–326
Mohammed (mō-hām'ed), 301
molasses, 229, 231–232, 233
monkeys, 209, 325
monsoons (mōn-sōnz'), 323
Monterrey, México (mōn'tēr-rä'), 30
Montevideo, Uruguay (mōn'tē-vīd'ē-ō), 165, 169, 170
Montezuma (mōn'tē-zōō'mä), 2–3
Moors, 253–254, 261
Morocco (mō-rōk'ō), 238 (*map*), 300, 302, 304, 309
Moslems (mōz'lēmz), 304, 310, 311
mosques (mōskz), 310
mosquitoes, 196, 280, 296, 325
motor trucks, 190, 197
motorboats, 274
Mount Aconcagua (ä'kōn-kä'-gwä), 58, 117
Mount Chimborazo (chīm'bō-rä'zō), 9 (*picture*)
Mount Etna (ēt'nä), 281
Mount Olympus (ō-līm'pūs), 288

Mount Vesuvius (vē-sū'vī-ūs), 280
mountain basins, 18, 66, 102, 132, 302
mountain dwellers, 294–295
mountain vegetation, 47
mud huts, 148, 186, 307
mulattoes (mū-lät'ōz), 229
mules, 76, 78, 81, 135, 194, 196, 248, 249, 255, 294, 328–329
muscatel grapes (mūs'kä-tēl') 252
muscatel raisins, 252
mutton, 147, 149, 160, 166, 167, 307. *See also* sheep

N

ñanduti lace (nyän-dōō'tī), 175
Naples, Italy (nä'p'lz), 280–281
Nassau (näs'ō), 234
Natal, Brazil (nä-täl'), 197, 202, 205
natural barriers, 116–117
natural harbors, 169
natural resources, 131, 179, 212–213, 237, 287, 328, 331–332, 333
navigation, 241
Negroes, 6, 37, 64, 80, 103, 217, 227, 233–234, 317
Netherlands West Indies (nēth'ēr-ländz), 223, 234
Nicaragua (nik'a-rä'gwä), 17 (*map*), 36, 38, 45, 46
Nicaraguan Lowland, 38
nickel, 201, 295
nitrate (nī'trät), 100, 120–121, 122, 128, 312, 329
fields of Chile, 119 (*map*)
nitro-glycerin (nī'trō-glīs'ēr-in), 120
nomads, 143, 172, 294, 304, 306–307
North Africa, 253
North African Fringe, 300–313
North America, 8, 218, 329–330. *See also* United States
north pole, 318, 322
North Star, 316, 320
northern hemisphere, 10 (*map*)
Northern Sporades (spör'a-dēz), 289
nuggets (nüg'ētz), 200
nuts, 104, 110

O

oak trees, 21, 47, 276, 278, 259
oases (ō-ä'sēs), 26, 100, 134, 136, 138, 303, 306, 329, 331
oasis farming (ō-ä'sīs), 306, 307–308, 312

oats, 123, 126, 148, 149, 150, 168
occupations, regional, 328
oceans and ocean currents, 8–9, 149, 222, 323
oil and oil products, 67, 74–75, 82–83, 131, 160, 283, 329–330
oil fields, 74, 101, 104, 142, 160, 176
oil refineries, 31, 75, 142, 234
oil wells, 74, 75, 329–330
oilcloth, 138
oils, 179, 209, 211, 308
oiticia oil (oi'ti-ké'ká), 204
Ojeda, Alonso de (ô-hā'thā), 4
olive oil, 250, 251, 258, 292, 305
olives, 33, 107, 250–251, 256, 258, 259, 276, 277, 278, 280, 281, 291, 295, 304, 305, 306, 307
open-pit mining, 312
Oporto, Portugal (ô-pôr'tô), 259
oranges, 24, 32, 96, 107, 121, 166, 174, 175, 193, 198, 207, 218, 232, 253, 259, 280, 281, 304
orbit (ôr'bit), 320
Orient, 211, 226, 240, 245, 266, 272, 274
Orinoco delta, 58, 70
Orinoco Llanos, 69–70, 73
Orinoco Plain, 58–59
Orinoco River (ô'rî-nô'kô), 58, 72, 207–208, 217
Orinoco savannas, 183
Orizaba (ô'rê-sā'bā), 18
overgrazing, 304
oxcarts, 81, 174, 196, 198, 227
oxen, 107, 140, 174, 194, 212, 224, 232, 294

P

Pachuca, México (pā-chôw'-kā), 32
Pacific coastal lowland, 21, 38
Pacific Ocean, 4, 20–21
paint, 29, 138
Palermo Sicily, (pā-lûr'mô), 281
palm groves, 230
pampa (pām'pā), 132. *See also* Humid Pampa
Pan American Highway, 30, 38
Panamá (pān'ā-mā'), 17 (*map*), 37, 48–51, 55
Panamá Canal, 37, 38, 48–51, 52
Panamá City, 50–51
Panamá hats, 102
papayas (pā-pā'yāz), 174
paper, 29, 160–161, 187, 190, 204
Paraguay (pār'ā-gwî), 57 (*map*), 59, 139, 154, 172–177

trade and transportation, 173, 175–176
Paraguay-Paraná-Plata river system (pār'ā-nā' plā'tā), 58, 59
Paraguay-Paraná River, 139, 140
araguay River, 59, 172, 175, 176
Paraíba Valley (pā'rā-ē'bā), 191
parallels of latitude (pār'ā-lēlz), 8, 55, 318
Paraná Plateau (pār'ā-nā'), 132
Paraná River, 59, 132, 138, 140, 160, 177 (*picture*)
Parícutin (pār'ê-kôo-tēn'), 19
Patagonia (pāt'ā-gô'nā'), 132, 134, 136, 141–142, 160
patio (pā'ti-ô), 23
patrones (pā-trô'nās), 115
Paysandú, Uruguay (pi'sān-dôô'), 169
peaches, 107, 121, 152, 174, 193
peanuts, 24, 174
pears, 107, 121, 136, 142, 152, 193
peas, 304
pelicans, 100
Peloponnesos (pēl'ô-pô-nē-sôs), 288, 293
peppers, 110, 174
perfumes, 234, 310
Perú (pê-rôô'), 9, 55, 86, 87, 93, 94–102, 95 (*map*), 135
trade and transportation, 94, 96, 97–98, 99, 100, 102
Perú Current, 9, 55, 101 (*map*)
Peruvian balsam (pêr-ûv'î-ân-bôl'sām), 48
Peruvian desert, 332
peso (pā'sô), 24
petroleum fields, 31, 67, 74, 79, 100
phosphates (fôs'fātz), 312
piedmont (piēd'mônt), 132, 134
Piedmont (Italian), 272, 275
pigs; *see* swine
pig iron, 201
pigskin, 189
Pindus Mountains (pin'dûs), 288, 294–295
pine resin, 292
pine trees, 21, 47, 183, 185, 187, 306, 327
pineapples, 93, 228–229, 230, 232
pipe lines, 75, 79
Piraeus, Greece (pi-rē'ûs), 295
pirates, 220, 227, 311
Pisa, Italy (pi'sā), 278
Pizarro, Francisco (pi-zār'rô), 91, 92, 101

placer mining, (plās'êr) 200
plague, 305
plantains (plān'tīnz), 71
plastics (plās'tiks), 30
platinum mines, 80
plaza (plā'zā), 23
Plaza del Congreso (thēl Cōn-grā'sô), 156
Plaza de Mayo (thā mā'yô), 156
plowing, 90, 198, 199, 255, 248, 312
plums, 121, 151
Po delta (pô), 273
Po River, 268, 275
Po Valley, 268, 269, 270, 275, 281, 283
polar circles, 320–322
poles, 8, 9, 11
Polish immigrants, 147, 186
Polo, Marco (pô'lô, mār'kô), 274
Pompeii, Italy (pôm-pā'yê), 280
ponchos (pôn'chôz), 110–111
Popocatepetl (Smoking Mountain) (pô-pô'kâ-tā'pēt'l), 18–19
poplar trees, 136, 138
population, 6, 64, 70, 217, 283, 297, 313, 331
Algiers, 311
Argentina, 130, 149, 151
Buenos Aires, 156
Brazil, 178, 179, 185
British Guiana, 217
British Honduras, 218
Chile, 118, 123
Cuba, 226
Ecuador, 103
Greece, 287
Italy, 267, 276, 280
México, 15
Paraguay, 173
Puerto Rico, 231
Portugal, 259, 260
Perú, Lima, 102
Spain, 258
Uruguay, 164
world, 330–331
porcelain (pôr'sê-lân), 258
pork, 151
Port-au-Prince, Haiti (pôr'tô prāns'), 229
Pôrto Alegre, Brazil (pôr'tôô â-lā'grā), 180, 186, 187, 201
Portugal (pôr'tû-gāl), 3, 237, 239, 244–246, 247 (*map*), 248–261, 290
trade and transportation, 259, 260, 261, 262
Portuguese America (pôr'tû-gēz), 205
Portuguese colonies, 260–261
Portuguese explorers, 4, 317
Portuguese settlers, vi, (*map*), 1, 3, 5–6, 156, 169, 170, 179, 185, 186, 192, 202, 205, 216, 236

potatoes, 2, 67, 76, 83, 89, 96, 102, 105, 106, 123, 126, 142, 186, 228
Potosí, Bolivia (pô'tô-sê'), 108, 135, 332
pottery, 31, 24, 40, 90, 111
poultry, 24, 93, 115, 151, 174
power plants, 29, 170 190–191, 271–272, 287
praça (prā'sā), 194
Praça Maua (mou'ā), 194
prairies, 62, 183, 185
priests, 89, 90
Progreso, México (prô-grā-sô), 28
Pucallpa, Perú (pōo-kāl'pā), 98
Puebla, México (pwā'blā), 29
Puebla de los Angeles, Méxi-co (thā los āng'hā-lās), 30–31
Puerto Barrios, Guatemala (pwêr'tô bār'ryôs), 47
Puerto Cabello, Venezuela (kâ-bâ'yô), 74, 78
Puerto Montt, Chile (mônt'), 127
Puerto Rico (rê'cô), 17 (*map*), 222, 230–233
farming, 220 (*picture*)
pulping house, 41
pulpwood, 187
pulque (pōol'kā), 26, 27
pumas (pū'māz), 142
Punta Arenas, Chile (pōon-tā â-rā'nās), 127
pyramids, 2
Pyrenees Mountains (pir'ê-nēz), 241, 245, 246, 255, 256

Q

quartz (kwôr'ts), 200, 201
quebracho forests (kâ-brā'chô), 140, 175
quinine (kwî'nîn), 47
quinoa (kê-no'ā), 89, 106
Quito, Ecuador (kê'tô), 102–103, 104, 105

R

Rabat, Morocco (râ-bât'), 309, 310
radios, 201, 296
railroads and railroad centers, 76–77, 99, 125, 153–154, 196, 245, 270, 329
rainfall, 9, 60, 62, 71–73, 101, 222, 301, 323
Argentine Pampas, 152
Brazilian Highland, 188
Chile, 118
Colombia Lowlands, 81
Mediterranean countries, 263 (*maps*)
México, 20–21, 23
Middle America, 20 (*map*)
Pacific coastal lowlands, 80

rainfall—Continued

Perú, 9, 94
 South America yearly, 61
 (map)
 South America summer and
 winter, 72 (maps)
 Venezuela, 76
 raisins, 293
 raw materials, 124, 131, 283,
 333
 raw silk, 189
 raw sugar, 225
 rayon, 189
 Recife, Brazil (rê-sê'fê), 205
 Red Sea, 239, 317
 refrigerator ships, 147
 Republic of Panamá; *see*
 Panamá
 republics, 6-7
 reservoirs, 186, 190, 194, 205,
 254, 271, 296
 resorts, 126-127, 169, 274-
 275
 revolution, earth (rêv'ô-lû'-
 shûn), 320
 revolving (rê-vôlv'ing), 319
 rhea (rê'á), 143
 Riachuelo (rí'á-shôo-á'lô), 156
 rice
 Africa, 304
 Bolivia, 110
 Brazil, 179, 186, 194, 198,
 199, 207
 Caribbean Lowland, 67
 Dominican Republic, 228
 Dutch Guiana, 218
 Greece, 292
 Italy, 273, 276
 México, 27
 Puerto Rico, 232, 233
 Spain, 254
 Uruguay, 168
 Venezuela, 76
 Río (rê'ô), 31
 Río Aconcagua (á'kôn-ká'-
 gwä), 121, 124
 Río Atrato (ä-trä'tô), 68, 79,
 80
 Río Bío-Bío (bê'ô bê'ô), 125
 Río Chagres (chăg'rês), 50
 Río Colorado, 132, 134, 137,
 141, 142
 Río de Janeiro, Brazil (rê'ôô
 thê zhä-nä'ê-rôo), 180, 188,
 189, 191-192, 194-197, 195
 (map), 196, 201, 206
 Río de la Plata, 59, 156, 158,
 160, 165, 168, 170
 Río do Pará (thôo pá-rä'), 211
 Río Ebro (ê'brô), 246
 Río Guayas (gwä'yäs), 104
 Río Iguassú (ê-gwä-sôo'), 138
 Río Jacui (zhä-kwê'), 186, 187
 Río Loa (lô'á), 118
 Río Madeira (mä-dêr'á), 208
 Río Mendoza (mên-dô'sä),
 137
 Río Negro (nä'grô), 142, 165
 Río Pánuco (pä'nôo-kô), 31

Rio Paraíba (pä-rä-ê'bä),
 191-192
 Río Rimac (rê-mäk'), 101
 Río Tietê (tyê-tä'), 188-189
 Río Xingú (shêng-gôo'), 208
 river system, 59
 Riviera (rê-vyá'rá), 242, 276
 roads, 90, 92, 98, 146, 152,
 227-228, 260, 279, 308. *See*
also highways
 rolling mills, 272
 Rock of Gibraltar (jî-brôl'-
 tēr), 236 (picture), 238-239
 Roman Empire, 266-267, 279
 Romans, 253-254, 303-304
 Rome, Italy, 1, 278, 279-280,
 279 (map)
 ropes, 90, 308
 Rosario, Argentina (rô-sä'rê-
 ô), 135, 136, 153-154, 160
 rosewood, 209, 218
 rotos (rô'tôs), 122
 Rua do Ouvidor (rôo'ä thôo
 ô'vî-thôr'), 194
 rubber, 102, 179, 190, 209-
 211, 213, 331-332
 rugs, 31, 111, 295, 310, 311
 rum, 231-232, 233, 234
 Russian immigrants, 147
 rye, 142, 186, 249-250

S

Sahara (sä-hä'rá), 254, 300,
 301, 306, 309
 sailors, 260-261, 276, 286-
 287, 289, 316
 St. Croix (sânt kroi'), 234
 St. John, 234
 St. Thomas, 234
 Salado Marshes (sä-lä'do),
 144, 156
 Salonika Greece (sä'lô-nê'ká),
 287, 288-289, 296
 salt, 107, 120, 302
 salt beds, 119
 salt lakes, 321
 Salto, Uruguay (säl'tô), 170
 Salvador, Brazil (säl'vä-dôr),
 180, 205, 206
 San José, Costa Rica (sän
 hô-sä'), 52
 San Juan, Argentina (sän
 hwän'), 136, 232-233
 San Rafael, Argentina (sän
 rä-fel'), 136
 San Rafael, México, 29
 Santa Cruz, Bolivia (sän'tä
 krôoz'), 94
 Santa Fé, Argentina (sän'tä
 fä'), 135, 151, 153, 160
 Santa Marta, Colombia (sän'-
 tä măr'tä), 78
 Santiago, Chile (sän'tê-ä'gô),
 119, 124
 Santos, Brazil (sän'tôozh),
 188, 190, 193, 194
 Santos-Dumont Airport (dôo-
 mônt'), 197

São Francisco River (soun
 frän-sês'kôo), 205
 São Paulo (soun pou'lôo),
 180, 185, 188 (map), 187-
 193, 210, 211
 sapota tree (sä-pô'tä), 47
 Sardinia (sär-dîn'î-ä), 268,
 281, 282
 savannas (sä-vän'áz), 62-63,
 70
 schools, 33, 52, 74, 77, 164,
 229, 237, 296
 scrub forests, 203, 227, 234,
 242, 255, 303, 304, 324-
 325
 sea birds, 101
 sea routes, 38, 295, 312
 seaports, 43, 78, 142, 152,
 211, 212, 230, 233, 257, 258,
 268, 275, 309
 seasons, 55, 319-320, 321
 (map)
 sediment (sêd'î-mênt), 118,
 268
 seeds, 296
 self-sufficient, 26
 semi-arid lands (sêm'î ar'îd),
 254
 serfs (sûrfs), 3
 Serra do Mar (sêr'rä thôo
 măr'), 180, 188, 190 (dia-
 gram), 191
 Seville, Spain (sê-vîl'), 258
 shawls, 275
 sheep, 8, 93, 141-142, 144, 328
 Africa, 306
 Argentina, 131, 138, 141-
 142, 144-145, 146, 147,
 149, 152, 153-154
 Bolivia, 105, 106
 Brazil, 185
 Chile, 114, 122, 127
 Greece, 287, 294, 296
 Italy, 271, 276, 282
 México, 24
 Perú, 96
 Portugal, 261
 South America, 64, 141
 (map)
 Spain, 255, 256, 258
 Uruguay, 165, 170
 sheep scab, 141
 shellfish, 127
 shepherds, 276, 287, 301, 306
 shipbuilding, 8, 256, 276, 280-
 281
 ships and shipping, 7, 142,
 154, 160, 240, 261, 286-287,
 296, 316
 shoes, 124, 125, 189, 196, 233
 Sicilian Channel (sis'îlî-ên),
 239-240
 Sicily (sis'î-lî), 239, 268, 281-
 282, 287
 Sierra Madre (sí-êr'ä mä'-
 thrä), 18
 Sierra Nevada, 246
 Sierra Nevada de Santa
 Marta, 78

silk, 189, 257, 272, 274, 276,
 278, 293, 310
 silt, 158, 144, 254, 268
 silver, 15, 30, 31-32, 90, 93,
 96, 256, 258
 sisal (sê'säl), 27-28, 32, 228,
 229
 skills, 329-330
 skyscrapers, 125, 188, 194,
 331
 Sleeping Lady; *see* Ixtacih-
 uatl
 smelting, 96, 125, 201. *See*
also steel
 Smoking Mountain; *see*
 Popocatepetl
 snakes, 48, 209, 325
 snakeskin, 189
 snow, 122, 123, 142, 242, 268,
 302, 323
 snow line, 21, 62, 80
 snowfields, 246, 253
 soap, 29
 sodium nitrate (sô'dîl-îm nî'-
 trät), 118-120
 softwoods, 331-332
 soil, 118, 123, 137, 183, 192,
 198, 203, 206, 208, 248, 250,
 251, 252, 268, 273, 276, 278,
 280, 281, 282, 287, 291, 296,
 324
 solstice (sôl'stis), 90, 320
 South America, 4-5, 9, 54-
 220, 317, 325
 cattle, 167 (map)
 coffee, 192 (map)
 population, 11 (map)
 sheep, 141 (map)
 summer and winter rain-
 fall, 72 (map)
 vegetation, 63 (map)
 yearly rainfall, 61 (map)
 south pole, 60, 318
 Soviet Union, 74, 178, 201
 spaghetti, 281
 Spain, 3, 156, 230, 237, 239,
 241, 244-258, 247 (map),
 261, 262, 301, 304
 trade and transportation,
 250, 254, 256-257, 258,
 262
 Spanish Conquest, 91-93
 Spanish explorers, vi (map),
 3-5, 58, 67, 317
 Spanish settlers 1, 3, 15, 216-
 217, 236, 328
 Argentina, 131, 137, 143-
 145, 146, 147, 152, 156,
 158, 170
 Bolivia, 107, 110
 Brazil, 192
 Chile, 120, 124, 126
 Hispaniola, 227
 Paraguay, 172
 Perú, 96
 Puerto Rico, 230
 Uruguay, 164, 168, 169
 Spanish language, 172, 179,
 230

- Spanish Morocco** (mō-rōk'ō), 304
spices, 274
Sporades (spōr'ā-dēz), 289
spruce trees, 327
squashes, 2, 23
stars, 240, 316, 319
steam engines, 160, 329
steel, 30, 109, 125–126, 153, 187, 188, 189, 201, 213, 256, 257
steel plows, 152
steers, 149–150. *See also* cattle
steppes (stēps), 62, 301, 303, 306–308
stockyards, 159. *See also* cattle
stone walls, 90
storage tanks, 31
stoves, 189
Strait of Gibraltar (jīb-rōl'-tēr), 240, 245, 246, 304, 316
Strait of Magellan, 58, 134
straw hats, 175
streetcars, 77, 110, 190–191, 311
streets, 110, 226, 256. *See also* highways
stucco (stūk'ō), 173
subsistence farms (sūb-sis'-tēns), 26, 67, 76, 87, 92, 95–96, 102, 105, 173–174, 176, 179, 217, 261
Sucre, Bolivia (sōō'krā), 110
Suez Canal, 48, 239, 240, 295, 317
sugar beets, 273
sugar cane and sugar, 6, 24, 98–99, 169, 202, 205–206, 224–225, 228
Argentina, 134, 135–136, 205–206, 207, 213
Bolivia, 107, 110
Brazil, 179, 198
British Guiana, 217
Caribbean Lowland, 67
Central America, 45
Chile, 124
Colombia, 80, 82, 83
Cuba, 223–225
Dominican Republic, 228
Dutch Guiana, 218
Haiti, 227, 229
Java, 226
México, 27
Perú, 96, 97, 98–99
Puerto Rico, 230–232, 233
St. Croix, 234
Spain, 254
Venezuela, 75, 76
Virgin Islands, 233–234
West Indies, 234
sugar, date, 255
sulfur (sūl'fēr), 210, 282
Sumatra (sōō-mā'trā), 211
sun, 55, 316, 319–322
sundial, 90
- Suriname** (sōō'rī-nām), 216, 217, 218
suspension bridge (sūs-pēn'-shūn), 90
swamps, 42–43, 278, 280, 282
swine, 24, 93, 115, 147, 153–154, 186, 229, 255, 259
Swiss immigrants, 147, 164
synthetic rubber (sīn-thēt'ik), 211
- T**
- tagua palm** (tā'gwā), 104
Tagus River (tā'gūs), 246, 261
tallow, 185
tamales (tā-mā'lēz), 23
Tampa, Florida (tām'pā), 226
Tampico, México (tām-pē'-kō), 31
Tangier (tān-jēr'), 304, 309
tanneries, 30, 78
tannin (tān'īn), 140, 176
tanning, 187, 209
tapirs (tā'pērz), 209
taxes, 29, 74, 226, 233, 275, 283, 296
telephone poles, 140
telephones, 77, 110, 191, 296
Tell, 303, 304–306
temples, 14, 90, 286
Temuco, Chile (tā-mōō'kō), 127
tenant farming, 8, 107, 147–148, 149, 150, 151, 152, 166, 167, 186, 192, 198, 227, 267
terraces, 312–313
Texas, 282
textiles, 29, 76, 160–161, 169, 176, 187, 189, 207, 256, 257, 272, 276, 280–281, 295.
See also cotton, rayon, wool, silk
thatch, 250, 307
Thessaly (thēs'ā-lī), 288, 289, 292, 294
thunderstorms, 97
Tiber River (tī'bēr), 279
Tierra del Fuego (tyēr'rā dēl fwā'gō), 59–60, 62
tile, 310
timber, 141, 209, 287, 288, 324, 327
timber line, 21
tín, 108, 110, 316
Titicaca Basin (tē'tē-kā'kā), 105, 109
tobacco, 2
Africa, 304, 306
Brazil, 179, 186, 194, 206–207
Central America, 45
Colombia, 82
Cuba, 224, 225–226
Dominican Republic, 228
Greece, 292, 293–294, 295
Paraguay, 174, 175, 176
- Puerto Rico**, 230, 232, 233, 168
Tocopilla, Chile (tō'kō-pē'yā), 119, 120
Toltecs (tōl'tēkz), 14–15
tool manufacturing, 257
topsoil, 198, 231, 312
tortillas (tōr-tē'yāz), 24
tourist trade, 30, 31, 77, 138, 226, 234, 275, 276, 280, 281
tractors, 198
trade and transportation, 7, 8, 68, 77, 152, 152–155, 240, 241, 245, 246, 268, 269, 270, 83, 288, 329
tree line, 271
trees, 139, 324. *See also* forests
Trieste (trē-est'), 274, 275
Trinidad (trin'ī-dād), 234
Tripoli, Libya (trīp'ō-lī), 306, 312
trojes (trō'hāz), 151
Tropic of Cancer, 20, 55, 322
Tropic of Capricorn, 55, 173, 320
tropical crops, 27, 31, 52, 229, 232, 254–255
tropical forests, 21, 38, 42–43, 46, 47, 58, 64, 70, 89, 94, 96–98, 103, 182, 185, 208–209, 217, 227, 322, 324–325
tropics, 45, 55, 320, 224
truck farms, 149, 151–152
Trujillo, Perú (trōō-hē'yō), 99
Tucumán, Argentina (tōō'-kōō-mān'), 134–136
tundras (tōōn'drāz), 324
tungsten (tūng'stēn), 109, 201, 260
Tunis, Africa (tū'nīs), 302, 303, 309
Tunisia (tū-nish'ā), 238
(map), 304, 308
tunnels, 295
turbines (tūr'bīnz), 257, 272
Turin, Italy (tū'rīn), 272, 275
Turkey, 292, 296
turtles, 209
- U**
- United States**, 37, 48–49, 50, 67, 74, 146, 168, 218, 223, 230, 231, 233, 236, 254, 282, 311, 323
companies, 30, 43, 74, 119, 229
trade, 28, 42, 47, 70, 99, 120, 139, 154, 158, 194, 201, 204, 206, 212, 224, 225, 226, 229, 233
universities, 77, 102, 110, 229
Uruguay (ū'rōō-gwī), 55, 133
(map), 139, 164–170, 185
trade and transportation, 167, 169, 170
Uruguay River, 132, 165, 138, 170
- Ushuaia**, Argentina (ōōs-wā'-yā), 132
Uspallata Pass (ōōs-pā-yā'tā), 117, 138
- V**
- Valdivia**, Chile (vāl-dē'vyā), 124, 125
Valencia, Spain (vā-lēn'shā), 253
Valencia, Venezuela, 76, 78
Valencia Lowland, 253
Valparaíso, Chile (vāl'pā-rā-ē'sō), 116, 124–125, 138
Vatican City (vāt'ī-kān), 279
vegetables, 26, 39, 67, 80, 121, 137, 149, 151–152, 166, 168, 174, 205, 280, 291
vegetation, 21, 62–64, 312, 322–327
Brazil, 182–183
Caribbean countries, 66
Gran Chaco, 173
Humid Pampa, 143
Mediterranean region, 242
(map)
Middle America, 21
(map)
South America, 63
(map)
Venezuela (vā'nā-swā'lā), 4, 66, 67, 68, 69
(map), 71, 74, 82–83, 101, 160, 217, 223
products, 79
(map)
trade and transportation, 74, 75, 76, 78, 82–83
Venice, Italy (vēn'īs), 67, 267, 274–275
Veracruz, México (vā'rā-kroōs'), 4, 30
Vespucius, Americus (vēs-pōō'shūs), 4
villa (vil'ā), 137
vineyards, 101, 107, 121, 134, 136, 137–138, 187, 259, 291, 304, 329
Virgin Islands, 222, 233–234
volcanic ash, 19, 280
volcanic cones, 18
volcanic islands, 222, 302
volcanoes, 18–19, 103, 221, 280–281
Volta Redonda (vōl'tā rē-dōn'dā), 189, 201
vulcanizing, 210
- W**
- wagons**, 135, 138
warehouses, 75, 89, 158, 169, 194
water power, 29, 101, 110, 131, 160, 257. *See also* hydro-electric power
water supply, 89, 123, 248, 253–254, 255, 268, 304, 306, 307, 328–333
Africa, 302, 307, 310, 312
Argentina, 134, 135, 146

- water supply—*Continued*
Brazil, 205
Chile, 118, 119, 120, 122, 329
Gran Chaco, 140
Greece, 296
Italy, 271, 277
Orinoco Llanos, 73
Patagonia, 142
Perú, 101
Spain, 248, 262
Uruguay, 166
Venezuela, 77
water wheels, 257, 262
waterfalls, 138, 217
weather reports, 323
wells, 73, 146, 152, 174, 312
West Indies, 3–4, 220–234, 303
wet season, 72–73, 81, 104, 181–182, 224
wharves, 158, 211, 169, 194
wheat, 67, 158, 330
Africa, 303, 304, 306, 307
Argentina, 130, 135, 142, 147, 148, 150, 152, 153–154, 160
Bolivia, 107
Caribbean countries, 67
Chile, 121, 123, 126
Colombia, 67
Ecuador, 102
Greece, 291–292
Italy, 273, 276, 278, 280, 281, 282
México, 26, 32
Perú, 96
Portugal, 259
Spain, 249, 256
Uruguay, 168
wilderness, 179, 184
windmills, 142, 146, 150, 151, 152, 312, 329
winds, 101, 222, 289–290, 322–323
Aegean Sea, 290 (*diagram*)
windward, 222
wine, 187, 252, 253, 259, 276, 277, 281, 292, 305, 329
wine cellars, 122
winepress, 138
wineries, 124, 187, 252–253
wire, 146, 150
wood, 125, 179, 196–197, 218
wood pulp, 29
wool and woolen textiles, 87, 90
Africa, 307
Argentina, 138, 141–142, 147, 148, 149, 153–154, 160
Bolivia, 106–107
Brazil, 187, 189
Chile, 127
Italy, 272, 276, 278
Perú, 96, 102
Portugal, 261
Spain, 256, 257, 258
Uruguay, 166, 167, 169, 170
world
forests, 326–327 (*map*)
population, 326–327 (*map*)
trade, 158, 161, 225, 245, 286–287
World War I, 124, 227–228, 292
World War II, 124, 153, 211, 295, 304
Y
yams, 232
yarn, 187
yellow fever, 48, 49–50, 196
yerba maté (*yâr'ba mã'tã*), 139, 169, 175, 176
Yucatán (*yōō'kã-tãn'*), 18, 21, 27
Yucatán Peninsula, 14
Z
zinc, 32, 109, 141, 282, 295

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